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An ESSAY Towards A

NATURAL, EXPERIMENTAL, and MEDICINAL

HISTORY

OF THE PRINCIPLE

MINERAL WATERS

OF

Cumberland, Northumberland, Weſtmoreland, Biſhop-prick of Durham, Lancaſhire, Cheſhire, Staffordſhire, Shropſhire, Worceſterſhire, Gloceſterſhire, Warwickſhire, Northamptonſhire, Lieceſterſhire, and *Nottinghamſhire,*

Particularly thoſe of

Neville Holt, Cheltenham, Weatherſlack, Hartlepool, Aſtrope, Cartmall &c.

WHEREIN

They are carefully examined and compared, their Mineral Contents are diſcovered and ſeparated, their Uſes ſhewn and explained &c.

To which is added, a

Short Diſcourſe on COLD and TEPID BATHING,

AND

A TABLE of the Temperature of all the Warm Waters in *England,* and moſt of the Cold Baths, from *Carliſle* to *Gloceſter* and *Oxford.*

Being the Second Volume of the Mineral Waters of ENGLAND.

By *THOMAS SHORT,* M. D. of *Sheffield.*

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TO THE
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AND
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And alſo of the
North-riding of the County of YORK,
High Steward of *Higham Ferrers*
AND
Knight of the moſt Honourable Order of the Bath.
And to the
RIGHT HONOURABLE
MARY Counteſs of MALTON &c.

This Second Volume, or Eſſay towards a *Natural*, *Experimental*, and *Medicinal* HISTORY of the Mineral Waters of *England*, is humbly inſcribed by their Lordſhips and Ladyſhips moſt obliged and humble Servant.

Tho: Short.

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A CATALOGUE of Mineral Waters Examined in this Second VOLUME.

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Barrowlays.
Bedal.
BENTHAL.
Bingley.
Birmingham.
Blackmore.
Bloxham.
Boulton.
Bournley.
BROCKHOLE *neth*:
Buglawton.
Caergyrle.
Cambridge.
CANNOCK.
Carliſle.
Carſtarphen.
CARTMALL.
Carleton on Trent.
CHADLINGTON.
CHELTENHAM.
Chorley.
KIMGS-CLIFFE.
CLIFTON.
Clythero.
CODSALWOOD.
Colmes.
Comnor.
Cornwell.
Coſgrave.
Goventry.
CROSS-FELL.
Cunliff-houſe.
Deddington.
Derby.
Dinnington.
Driggwell.
Dudley.
Durham.
Emmot. or Lanſhaw-Bridge.
Ganesburrow.
Hanbridge.
HARTLEPOOL.
Holmforth.
Hulmgreen.
Ilmington.
Inglewhite.
KIRKBY-THEWR.
Kingham-bogg.
Lancaſter, or Sales.
LATHAM.
LEAK-MEADOW.
Leamington.
Liquoris-green.
Litchfield.
Liverpool.
Loansburrow.
Lockwood.
---- Lunt.
Malvern-hills.
MAUDSLEY.
Mellarby.
MOFFAT.
Moretonlee-Pump.
Moſshouſe.
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Notingham.
Oxford new Well.
Pitchford.
Preſcod.
Puckwell.
Rempſide-moor.
Shiphnal.
STANGER.
Stockport.
Storra.
Tarleton.
Thoroton.
WARDREW.
WEATHERSLAG
Wellingburrow.
Whaley.
Whitcar.
Wigan.
Wigton.
*W*illenhall.
*W*ILLOWBRIDGE.
Wiſſingham.
*W*orton.
*W*roxton.

Beſides ſeveral others of leſs Note.

PREFACE.

THE Dignity *and* Uſefulneſs *of this Subject, has been ſo fully and plainly proved, at ſeveral times, by the Royal* Academy, Royal Society, Hoffman *Phyſician to the King of* Pruſſia, *but eſpecially by the learned and ingenious Dr.* Peter Shaw, *in his late Eſſay on Scarburgh Water, that no more need be ſaid to recommend it to thinking Men, who either regard their own* Health, *or that of their fellow creatures.* Bergerus *well obſerves, that nothing in the Art of* Healing *or* Phyſiology, *can challenge the preference. It has indeed employed many fine Genius's, and ſo racked them, that ſome have doubted, whether an undertaking clogg'd with ſo many Difficulties, could ever be rationally explained; for ſuch as have attempted it with more Care and Penetration, have not been able ſo fully to extricate themſelves, but they have ſtill found new Doubts ariſe. And to what was ſaid, in the Preface to the firſt Volume, on the Excellency and general Uſefulneſs of this Work, I might add Innumberable more Inſtances and Authorities, from Practical Authors, Obſervation Writers, and ſuch as have profeſſedly treated of the Subject, from* Hippocrates *and* Savonarola *down to the preſent time; and however they might vary in their Gueſſes and Opinions about the impregnating principles of Waters, or differ in their Proceſſes of Examination, or their often wild or groundleſs Concluſions, from their lame and inſufficient Proceſſes; yet it would be unfair to ſuppoſe or allow ſnch Miſtakes in their* Hiſtories *of the real and viſible* Effects of thoſe Waters *on human Bodies, whether uſed inwardly or outwardly by the diſeaſed, theſe were filed on the Records of time, as well before Methods of Examination were excogitated and attempted as ſince. For* Solomon *built* Tadmor *in the Wilderneſs (now* Palmyra*) for the Convenience of Travelers and the Diſeaſed, that they might be accomodated with noble refreſhing* Warm Springs, *for* Bathing and Drinking. Herod *was ordered by his Phyſicians, to* *the Warm Waters of* Callirhoes *beyond* Jordan, *tho' too late*, Alexander Tralianus *and* Avicenna, *both ordered Warm bath Waters to be drunk for the Colick.* Scribonus Largus, *who was Co-temporary with* John *the* Baptiſt, *in Ulcers and Tumours of the Bladder, ordered Water to be drunk, wherein hot Iron had often been quenched, as a Subſtitute for the Chalybeates of* Tuſcany, *he lived in the Reigns of* Auguſtus *and* Tiberius. Galen *in his Fourth Book of Health intimates that ſome Waters were found, which being Nitrous and Sulphureous, were drunk for Purging. Indeed he being the Father of the hypothetical Sects, payed little regard to the Empyrical part of Medicine, in which he probably placed the uſe of ſuch Waters; He gave himſelf very little Pains to enquire into their Nature and Effects.* Oribaſius, *Phyſician to Julian the Apoſtate, mentions drinking Waters which Sprung up ſometimes hot, ſometimes cold.* Pliny *who flouriſhed under the Emperors* Veſpaſian *and* Titus, *ſpeaks of Nitro-aluminous Waters uſed for Purging.* Vitruvius *who was co-temporary with* Auguſtus Ceſar, *Mentioning the Vertues of hot Baths in uſe, from their Impregnation with* Sulphur *and* Nitre, *ſays, they were drunk plentifully to Purge the Body; and adds the Names of ſeveral ſuch Waters as by drinking, Purged, and Waſted Scrophulous Tumours.* Amidenus, *who flouriſhed in the Fourth Centry, Writing of the Diet preſcribed by* Archigenes (*who lived about the* 108*th Year of Chriſt*) *ſays* we are adviſed in Ulcers of the Bladder, to drink Allum or Sulphur Waters, *and give Direction about their uſe.* Pauſanias *in* Arcadicis *ſays, that the People of* Chyos, *had a Spaw called Alliſſon, which, ſuch as were bitten by Mad Dogs, drunk plentifully off.* Strabo, *deſcribing* Italy, *Mentions ſome Medicinal Waters call'd* Albula *and* Labana, *which were much uſed, both for drinking and bathing, for the cure of Diſeaſes. He ſays, That in the Iſland* Iſchia, *is a noted Spring for breaking and expelling Stone and Gravel. But Quotations of this Sort are both needleſs and endleſs; the uſe of Mineral Waters being the only unvaried practical part of Phyſick, whoſe Succeſs has not only maintained, but encreaſed their Reputation, through ſo many Ages.*

It's true the manner of uſeing them has often been changed, according to the Humours of Man, and preſent prevailing Philoſophy, either underdoſing or overdoſing them, frequently to their great diſadvantage. Hence the Poor and Vulgar, who have kept Inviolably attached to the old and unrefined methods of drinking, when *they Accidentally find a Water proper in their Diſtemper, generally meet with an eaſier, quicker and fuller Cure, than others who perhaps drink when they ſhould bath, or take the laſt inſtead of the firſt, or do only one, when their caſe calls for both, and do all irregularly and unſeaſonably, and therefore unſucceſsfully: Or perhaps drink only a pint of plain Sulphur or Chalybeate Waters, inſtead of four or five Quarts; yet ſuch very unreaſonabley expect the ſame ſpeedy relief, as theſe who daily drink ſuch a Doſe as may anſwer the deſired end.* Fallopius *juſtly obſerves, that the quantity or doſe of Water to be drunk each Morning, has always been at the Caprice of the Age, or Humour of the preſiding Phyſicians, whoſe Fidelity and Sincerity may not always be totally extempt from lucrative views, ſometimes diſcoverable by unneceſſarily lengthening out the time, and leſſening the Doſe, or ordering too frequent intermiſſions of their uſe at Short Intervalls; or each recommending and preſſing the uſe of their particular Water in moſt or all Caſes, Conſtitutions and Diſeaſes. or very unfairly clogging the uſe of the Water with Medicines all the while, to the Diſadvantage of both Water and Patient. In* Archigenes's *time the Doſe* Fallopius *tells us, was from three to nine pints; in* Aleardus's *Days one quart,* Savonarola *adviſed it from thirteen to twenty pints.* Fallopius *would have the Drinkers to begin with a ſmaller quantity, as four or five pints, and encreaſe it half a pint every Morning for ten Days, ſo continue, and at laſt, for the laſt ten Days decreaſe half a pint daily, having always a Regard to the Age, Strength, Exerciſe, Sex, Diſeaſe* &c. *of the Sick. This laſt was the common Doſe in England Sixty Years ago, and is ſtill Continued ſo at Aſtrope Wells, a place no leſs noted for it's noble, volatile, enlivening Chalybeate, than the many truly ſurprizing cures done, in Compariſon of it's Number of Company. The like may be ſaid of ſome other places, for however the preſent modiſh way of drinking three half pints, or a liberal Quart in a Ferenoon may do a ſhort time, for the places themſelves, to keep the Company longer together, the Waters being ſenſibly found not to have their former Succeſs, will uniuſtly fall into Diſeſteem, and be at laſt deſerted by all the Strangers. It's true this quantity of ſome Waters, is enough at a time, as of* Cheltenham, *the firſt and ſtrongeſt nitrous water diſcovered in Britain, even a Brine of Nitre, whoſe Efficacy reaches the ſmalleſt Veſſels in the remoteſt part of the humane Body, in as many Weeks as* *others of the ſame kind require Months.* Holt in Lieceſterſhire, *whoſe Singular rich Impregnation with much Nitre and ſome Alum, render it a moſt powerful corroborating Water; hence it expeditiouſly cures Relaxations, Hemorrhages and Ulcers.* Weatherſlack *with it's Load of Marine Salt, Steel and Calcarious Earth, the ſecond whereof is abſorbed by the laſt in a few Minutes, hence it's wonderfull Succeſs in Cachexies, Leutophlegmatia, beginning dropſies; and in cold Flegmatic Bodies, foul or loaded inteſtines or viſcera; in Diſeaſes of old Age, or cold Conſtitutions, Menſes depraved or retained, Worms, Lethargic Diſpoſitions, want of Appetite and Digeſtion* &c. Stanger *for old and great Surfeits, diſeaſes of the Stomach, irregular Menſes* &c. *from it's Saburra of Marine Salt and Steel,* Maudsley, Harrigate, Braughton, and Crickle, *with their much Sulphur and Marine Salt; three or four pints of* Kinalton *and* Tarleton, *with their Calcarious Earth and Nitre.* Cliff *with Nitre, much Steell calcarious Earth and Ironſtone But for the plain light Chalybeate Sulphur or Nitro Calcarious Waters, they ſhould be drunk in a larger Doſe to anſwer Expectation.*

As to Bathing, Fallopius *informs us, that the common time in hot Baths, was, from an Hour and a half to two Hours, and in the cold Bath from three to five Hours, in the morning early, after a ſhort walk, and Evacuation of both Excrements, on an empty Stomach, and continued it dayly from fifteen to thirty days without intermiſſion; but however ſtaying ſo long time in the Bath might do with them, in a warmer climate, yet I am ſure it would quickly ruine our Conſtitutions. And even this outward uſe of Waters, has it's Modes and Changes, but ſeldom the better for* Moffatwells, *ſuch as bathed in it warmed, came out of it, went to Bed and ſweated; now they come out, dry the Skin and dreſs immediately; but it's doubtfull, that it's ſpecial ſervice in Gouty,* Scorbutic, *Arthritic and Rheumatic Pains, and in Cutaneous Diſeaſes will be leſſened by it, ſince they now ſweat not out theſe acrid ſaline humours, that were thrown upon and lodged in the Excretory Ducts of the Skin, and dayly ſent thither afreſh from other parts of the Body there to be diſcharged.*

I by no means thought it Sufficient, *to content my ſelf with a ſlight view of the Waters, or take them on the Report of others who are ſeldom Competent Judges; but ſtrictly euquired into every* thing, as ſar as time and other conveniencies would allow me I took particular Notice of the Earth, places under and about the Springs, compared theſe of different Springs with one another, and with their Vortues and Effects upon our Bodies; and after all, I am far from thinking, that I have made all the Experiments and Enquiries neceſſary, to a full Conviction, or mathematical Demonſtration; having now before me a ſcroll entitled Experienda et Ulterius Inquirenda. *Obſervations, Experiments and Inferences, amounting to a rational Demonſtration, was all I laboured for. I have carefully avoided theories and ſuppoſitions; and finding in my ſelf how common it is for ſuch as have got a ſmattring, or ſuperficial knowledge in any ſtudy, to be elated, and take ſeveral things for granted, till they ſuffer themſelves, to be miſled; I am not aſhamed to retract ſomethings in this Second Volume; which had unwarily crept into the firſt, from a too ſhort Acquaintance with the Subject, and as I had freely pointed out ſome Errours in Others, it would now be highly diſingenuous in me to conceal my own, when detected and convinced of them by further Labour and Study.* As 1ſt: *Where it's ſaid that the White colour and præcipitation of Waters with oil of Tartar and ſpirit of Hartshorn, were ſigns of Nitre, I now find it a ſure ſign of alcaline Earth only; ſeveral of the Waters I had then tried, contained both Nitre and alcaline Earth, other Waters which contain both a moſt alcaline Earth and Salt, and yet that Oil, or ſpirits alter not:. Second, that I had never taſted any Waters bitteriſh, I recall, and from ſufficient Experience aſſert, that a bitter Taſte is a ſure ſign of Nitre, and the more of this Salt any Water contains, the bitterer it is.* 3: *As to highly putrified Waters turning black with Metallic Solutions, being a ſure ſign of Sulphur as a principle in theſe Waters when they ſprung up at the Fountain, I have ſince made ſome obſervations, that incline me to belive, that the ſame will hold good in ſeveral other Waters not reputed Medicinal; but if the Water was at firſt Chalybeate, I can by no means exclude Sulphur from being an ingredient in the Compoſition of Iron.* 4: *I now ſay that a Water freſh taken up turning pink, red, or purple with Galls, is no ſure evidence of it's containing Vitriol, but Iron, ochre, or Rubrick, only; for a Water coutaining Vitriol, turns inſtantly blew with Galls. But I have had præcipitations of Steel or Iron made with Galls, which were dried and laid up ſome Years in the open Air, the* *they Generated, and then afforded Vitriol by ſolution and Filtration. The Reader will obſerve ſome other former raſh Inferences corrected in this work, which I would not have him take for Inadvertent ſlips and contradictions.*

It has been of uſe to me, and ſervice to the Work, that in my ſearches, I have ſeen and found ſeveral ſorts of Mineral Waters digg'd into, and wrought quite through the impregnating Minerals, till the workmen came only to common Water again; hereby I was ſatisfied whence Chalybeate *and* Sulphur *Waters proceeded, what Ingredients entered their Compoſition, whence came their volatile principles and earths, the cauſe and manner of the Embryonation, production and ingredients of Ochre, Stalactites, Pyrites and other Petrefactions; of what Principles, Ochrous or Calcarious Earths falling down, or Cuticles riſing up to the Surface of Water, do conſiſt, with the reaſon of their ſeparation; and not only the Genus, but particular ſpecies of Foſſils which produce them, with the Cauſe of different Quantities in ſundry Waters of the ſame kind. With the Earths out of which Steel Waters riſe, and through which they are ſtrained. I have obſerved Iron mixt with* Sand, Gravel, Clays, Ochres, Cauk-ſtone, Chert-ſtone, Lime-ſtone, Free-ſtone, Gret-ſtone, Cryſtals, Stalactites, Marcaſites, Talc, Geodes, Shoadſtone, Coal, Baſs or Shiver, Shells, Ores, *and many other things; hence it is no wonder to find Chalbeate Water's ſo common in moſt places; nor is it at all ſurprizing that ſtrong Sulphur Waters vie not with Chalybeates in frequency, ſince all thoſe I have met with in* England, *and ſuch of thoſe in* Germany, *whereof we have faithfull and exact Hiſtories proceed only from the Mineral called* Braſillore, *by ſome,* Galæna inanis, Mocklead, Mundick, Mockore, Wildlead, Blende *or* Blind, *by others* Pyrites Aureus, Argenteus, *but unjuſtly, for iſt the Pyrites is a ſolid Body containing much Sulphur, ſome parts whereof by the Colliſion of any harder body, is looſened, ſet at liberty, and kindled into ſparks; but I never found or met with any of this ſo hard as to bear any ſuch Colliſion, as is neceſſary to the ſending out of Fire, for it's generally, very ſoft, and after it has laid ſometime in the open Air, it either Crumbles into ſmall pieces, or if ſqueezed in the Hand, it moulders to duſt.* 2: *If it's much Sulphur entitle it to this claſs, then the* Laps Piceus, Ampelites *or* Obſidianus, Lithonthrax, Gagates, *and* Succinum, *are all referable to the ſame. Tho' the arabian word* Marcaſite *be more proper, yet it's too general, they uſing it indifferently, for*

for all concrete bodies found looſe in the Earth, containing real or mock ores, mock metals, or other Minerals. Tho ſometimes we find Shiver-ſhale or Baſs near Sulphar waters, it may add a Chalybeate principle to the Water, but not a ſenſible Sulphar, this may be called Lithonthrax Sterilis nigra Sqummoſa, *and often holds other matters with it, as* Ochre, Iron, Marcaſites &c. *The Spars or Chriſtals which I have taken notice off in, under, near or above the ſprings, or courſes of Mineral Waters, hath either been in the Water, Gravel, Sand, in the Fiſſures of Lime Stone, Marble, Cauk, Coal* &c. *Theſe Foſſils are diaphanous, opac or of different colours, according to the ſundry Principles and proportions entering their Compoſitions, as when they contain* Earth, Iron, Lead, Sulphur, Copper, Calamy, Antimony, Sand, Ochre, Stone pouder, Clay *&c. Stalactitious or Sparry matter, proceeds from* Incruſtation, Exudation *or* Deſtillation, *when it adheres, gathers, and grows to the Stones, Sticks, Graſs* &c. *in the ſpring or it's Courſe, or inſenſibly Sweats through the porous ſubſtance of the Rock it's ſelf; or laſtly, gently and inſenſibly drops from ſome imperceptible Chinks or Fiſſures of the Rock. The laſt two ways produce* Stalactites, Stalagmites, Oſteocola, Ludus Helmontii, Lapis Syringoides *&c. Their Figures are endleſs, and the various proportions of their Sundry Conſtituting Principles, as different; hence their ſeveral Colours. and degrees of* Diaphaneity *or* Opacity. *Had I thought it of much ſervice to the illuſtrating the nature and properties of theſe Waters, or if time had permitted, I might have collected Foſſils and Minerals, at and near the ſprings Examined, whoſe natural Hiſtory would have made a third Volume, but the few taken notice off in the firſt, with the ſmall tryalls made on them, gave ſo much offence to ſome, that I have been ſilent in this. and as to acting the Plagiary in the Natural and Experimental Hiſtories, I am pretty ſafe for that, few of the Waters here treated off, having been wrote on before, therefore their Principles and Proportions can be known by very few of our Faculty, and leſs to Mankind, how can they then know which to preferr, as fitteſt in different Caſes and Conſtitutions? but ſhould ſome plead as an excuſe, that the performance is not equal to the Subject or deſign; this I readily acknowledge, and ſhould be glad to know of them who has done it better, or deſire them to take the ſame Labour, Expence, and Fatigue on them, as I have done, to mend it; it were to be wiſhed that* *ſuch Sneerers and Quarellers had not often Ignorance, Selfiſhneſs, Intereſt, or ſome other pityfull prejudice at the bottom, which they are unwilling to own.*

Talc *is one of the frequenteſt Foſſils met with near mineral ſprings eſpecially of nitrous Waters, there are many kinds of it, for tho it's the nature and property of all* Talc *to be elaſtic and flexible, yet the more Spar or coarſe Earth it contains, the leſs of this property it has; hence the* Ludus Helmontii, Syringoides *and* Belemnitæ *are wholy inflexible: On the contrary, the Selenites having moſt* Talc, *are moſt eaſily bended. All the* Talc *I found was either compoſed of paralleel threads, or Plates, as* Selenites *or* Micetes, *or of paralleel Tubules, as the* Syringoides, *or of talcy plates forming cells full of Stoney matter, as the* Landus Helmontii. Talc *is chiefly in* Nitrous Earth, Loam, Marble, Limeſtone, Geodes, Sands, Spar &c. *The* Gypſum, *Amianthus,* Linum Asbeſtinum, *belong alſo to the* Talcy tribe, *as do ſeveral curious branchy* Stalactitæ *I have met with, to the Foſſil* Coraloid *claſs. The* Aſtroitæ *and Belemnitæ are often found near nitrous Waters, and cryſtals near the warm and Sulphur Waters. I took Notice that in ſome places where the* Kaulgum *and* Kraulgum (Caukſtone *and* Croilſtone) *were mixt they ſweat out a white Creamy ſubſtance, which in time turns of a ſlight othry colour, hardens and produce various ſorts of Stalactitæ. If taken off when fluid, and kept ſome time, I found it contain a Chalybeate principle in larger or leſſer proportion, for both of them are of the Sparry kind, as* Chertſtone *is of the hardeſt flinty ſort, with red ſtreaks.* Shoad Stone, *is a lump or Marcaſite of Iron, ruſty, and of reddiſh or blackiſh brown colour.*

From the Separation, Præcipitation *and* Calcination, *of theſe Earthy or Metallic parts, and comparing the Effects of the open Air on them we ſee why they incruſtate the ſides of Veſſels, in which they are often boyled, long kept, or dayly carried. Why after a ſlight Calcination; the Loadſtone attracts them. Why with Acids, they ferment more remiſſly or violently, with or without Foam or Smoak. Why* Ochrous *and* Calcarious *Earth ſeparate not without the ſtrongeſt Blaſt, and why Water poured on ſome of thoſe calcined ſediments, ſends forth a ſtroug ſmel of Iron and Sulphur; and after ſtanding ſome time, ſtinks intolerably; why one part of the ſediment falls to the bottome, and another Earthy part riſes to the ſurface in* Evaporation: *And* *why if the Water is filtred off the calcined ſediment, it ſmells of* Iron, *and is firſt covered with a variegated ſcum like the Rainbow or Peacocks tail, but if let ſtand till it dry, it leaves white thin hard Scales. Theſe with many other curious natural and medical Queſtions may readily be anſwered by Searches and Experiments rightly and exactly made.*

I might have taken Notice of ſome objections made to this Work, but as many of them as deſerve any regard being anſwered in the firſt Vol: And in the ſequl of this, I ſhall not repeat them; only I may add, that as the component parts and principles of Animals *and* Vegetables, *have been ſeparated and anatomized, to the improvement of* Phyſiology, *and Benefit of Mankind in the dayly practiſe of Phyſick, ſo, no juſt or valid Reaſon can be offered againſt this laudable attempt; eſpecially as the Principles of Waters may be ſeparated with leſs* Difficulty, Trouble, Alteration or Admixture *of parts, therefore with greater Certainty and Satisfaction. And as the ſeparated parts of the firſt are uſed with much more Eaſe and Advantage, ſo might thoſe of the laſt by a better Acquaintance with them. The Proſecution of the Deſign may be of the greateſt importance and ſervice to many, but cannot poſſibly do hurt to any, except ſome narrow ſpirits ſhould imagine it a leſſening their Gain. But the ſame objection lies equally as ſtrong againſt all the excellent pieces publiſhed on the different branches of the Profeſſion, eſpecially in* Botany, Pharmacy, Chimiſtry, Surgery and Practiſe, *and I am afraid that without ſuch helps, ſuch as lay no claim to Enthuſiaſm in Phyſick, would make a ſorry Figure. This part of the* Materia Medica, *tho pleaſant and moſt uſefull, is far from being the moſt improved. For it was either wholly neglected, or at beſt but gueſs work, before that judicious and curious Inveſtigator of Nature, the learned and immortal* Fallopius, *took in this among his other laborious and indefatigable ſearches over all* Europe. *After him, we meet with little beſides* Theories *and* Suppoſition *in it, till the Great and Honourable* Boyl, *gave a noble ſpecimen of his Abilities, in his excellent* Directions for a Natural Hiſtory of Mineral Waters; *but unhappily he cloggs it with ſuch innumberable and inextriable Difficulties as made the Buſineſs appear impracticable, and occaſioned ſuch Diſcouragements, that little further progreſs was made in attempts of this kind in* England, *before that truely great, worthy, and Singular human*

Gentleman, Dr. Shaw, *(who, it may be preſumed will one day deſervedly ſtand at the head of his profeſſion in* Britain *) favoured the World with his excellent Tranſlation of Dr.* Hoffman *on Mineral Waters, and followed that with his own incomparable Eſſay on* Scarburgh Spaw, *wherein He offers fair to have ſurmounted thoſe ſuppoſed inſuperable Difficulties, eſpecially had he done more himſelf, and left leſs for others to do.* 2d, *That Enquiries of this kind ſhould be of prejudice to the profeſſion, is really a Miſtake, for the better acquainted Gentlemen of the Faculty are, with this branch of the practiſe, the more ſucceſsful muſt they be in Chronics, theſe very diſtempers in which phyſick is now of leaſt ſervice, tho' they are moſt grievous and afflicting to Mankind; and this ſucceſs will make them more eminent and valued as well as enable them to preſerve their Friends longer and uſefuller; but of this more afterward. That Phyſians who are acquainted with the Nature and Effects of Mineral Waters, ſhould be Conſulted by the Sick, both as to the Choice and Uſe of Waters proper in their Caſe, and how to prevent or remove any Accidents during the uſe of them, I have ſeveral times incultated in the firſt Vol: And left no Room for repeating it here.* 3d. *The forwardneſs of ſeveral eminent and learned Gentlemen of the profeſſion, to encourage and promote this work, as well from their Love and Benevolence to mankind, as a ſenſe of the uſe and want of it, ſhow that they are not apprehenſive of it's being injurious to the Faculty, amongſt whom it would be ingenerous not to mention the learned and Rev'd* Dr. Stanley *of* Liverpole, Dr. Tho: Tylſton *of* Cheſter, Dr. James Douglas *of* Carliſle, *The Rev'd. and ingenious* Mr, Matthew Herbert *of* King's Sutton *near* Banbury, John Crook's *of* Hartlpool Eſqr: Dr. Shepherd *of* Preſton Lancaſhire &c. *ſome indeed ſeem deſirous of a natural and experimental Hiſtory of Waters, but can endure to hear of no further, i. e. they would be glad to know themſelves, but care not that any body elſe ſhould be let into the ſecret of their uſes and effects, as tho' this bounty of Heaven were their property only, to diſpoſe off, or deſtribute.*

After I had ſeveral times examined the moſt noted Mineral Waters in and near Northamptonſhire *and* Oxfordſhire, *I had an account ſent me of ſeveral more obſcure, that I had not heard off before, which not ſeeming of Note enough to oblige me to another perſonal Viſit, the above Rev'd and worthy* Mr. Herbert, *(to whom not* *only I but the publick are indebted) having attended me in ſeveral of my former proceſſes, undertook the Examination of the following Waters himſelf, which he did very carefully and exactly; their natural and experimental Hiſtories, I beg leave to give in his own words in their proper place; their fixt parts he carefully obtained and ſent me, them I examined and have Claſſed with the reſt. His Waters are* Puckwell *or* Aynho, Bloxam, Hooknorton, Blackmoor, Barrowlayes, Wroxton, Worton, Kingham bog, Leak bog, Chadlington, Calverton, Cosgrave *Nor did I ſee* Cornwell *in* Northumberland, *but had it's Water from the ingenious Dr.* Bedford *of* Durham.

Some from curioſity or Neceſſity, would be glad of a few general Marks *to know different Mineral Waters by, they being either unacquainted or unprepared for long and Nice proceſſes of Examinations. Tho' ſuch* Marks *are very uncertain, eſpecially where ſundry ſorts of Earths and Salts happen to be mixt with one Water, yet I ſhall give a few of the beſt and eaſieſt I know. 1. A* Chalybeate *Water taſtes and Smells of* Iron, *turns fleſh boyled in it black, ſtains Linen cloths boyled in it, of a browniſh red colour, tinges it's ſpring and Baſon, brown, reddiſh brown or yellow, and leaves more or leſs ochre in it's courſe; Colours the chinks by which it's ſtrained under ground black; curdles ſoap, or turns pink, pale or deep red, or black with Galls,* 2d. Sulphur Waters *tinge the bottom of their Receivers jet black, above that, all is white and ragged, except they are often cleaned out. They taſte and ſmell of Brimſtone. All white Metals laid in their Spring or Stream become reddiſh, copper coloured or black, according to the leſſer or larger proportion of Sulphur in the Water, and the time the Metal lies in it. ſome are ſo ſtrong, that the meer Exhalations blacken Silver and white Metals at a Diſtance. They brighten the colour of Gold, turn the Serum of the Blood black, kill worms and other inſects, except their own; inſtantly ſtop the Fermentation of fermenting Liquors.* 3d. Salt Springs, *have a Saline, Salt or brackiſh Taſte, Curdle Milk and Soap, are improper for Domeſtick purpoſes; they weigh heavier than common Water in the ſame Circumſtances; they vomit or purge or both, and make the Skins of ſuch as bath in them rough.* 4 *Waters impregnated with* Marine *or* Sea Salt, *heat the Drinkers body, create Thirſt. And if much drunk make the body thinner, the water it's ſelf often looks whiter and paler than other Water.* 5 *ſuch as contain* Nitre *quench Thirſt, cool the Body, have a bitteriſh Taſte, penetrate all parts of the Tongue with a ſenſible Chillneſs and bitterneſs, purge from all parts of the Body without Heat, Thirſt or Griping, turn* raw fleſh *red, reſtore the decayed or loſt red Colour of the Blood, paper dipt in their Solution or Laxivium and dried, ſparkles in burning. Such Waters mixt with Strong acid Spirits, but chiefly Solution of Silver in Aquafortis, and let ſtand two or three Days, leave a deep Crimſon incruſtation on the Glaſs, this Salt ferments not with the ſtrongeſt acid Spirits like Sea Salt. 6. Theſe Springs that have* Vitriol, *turn green and Ferment with* Oyl of Tartar, *or Lixivious Salts, blew with* Galls, Sumach *&c, taſte and ſmell of Vitriol. they like Chalybeates, blacken the Mouth and Fæces of the Drinkers, blacken* Fleſh, Blood *and* Serum, *ſtain* Linen *of an Iron Mould Colour, they are of a deep blew with Logwood, have an aſtringent taſte, leave a reddiſh or yellow Sludge in their Courſe or Baſon.*

Alum Waters *ſet the Teeth on edge, taſte aſtringent and rough without bitterneſs, are of a dirty blackiſh Green, or olive Green with a Tea made of any Aſtringents, but of a beautiful pale pink red with a Tea made of* ragged Robin; *the Skin waſhed in them, turns rough and wrinkled.*

Now for Earths, Calcarious Waters, *or ſuch as contain much alcaline Earth, or Limeſtone pouder; they are unfit for houſe uſe, till they have been taken up and ſtood ſome time, to let fall their groſs earthly parts: They turn often white with oyl of Tartar, lixivious Salts, or volatile alcaline ſpirits, and ſome part of their Earth ſubſides, or it's incruſtated on the ſides of the glaſs. Such often abound with Petrefactions, under and in the ſides of their Courſe, and where they ouze up; they ferment with all acid Spirits, and deſtroy their ſourneſs. They turn Syrup of Violets Graſs green; they incruſtate the bottom or ſides of Metalline or earthen Veſſels, wherein they are often boyled or long kept, let fall a downy white Earth to the bottom of Bottles, wherein they have ſtood long; and on ſtanding ſeveral Days with pouder or Tincture of* Galls *they turn Graſs green, their Earth if long kept dry in the open Air, Generates a little* Nitre. 2d. *Waters carrying* Ochre *in their Pores, have near the ſame ſigns as* Chalybeates, *being often one Water; they let fall a yellow, brown, or reddiſh Earth to the bottom, boyl meat black,* *dreſs* Peas, Beans, *or other leguminous fruits black and hard; ſtain Linen, leave ochrous Sludges in their courſe. If with* Ochre, *the Water contains* Vitriol, *It's firſt a tranſparent blew with a little* Galls; *if only* Iron *or* Steel, Galls *turn it inſtantly a paler or deeper red or black. The dried Earth from the Water, having it's Salt ſeperated from it, and the firſt laid up in the Air, I have found it generate Vitriol. Both theſe* Earths *are greatly Medicinal.* 3. Clayie Waters, *leave much tough,* Slimy Sediment *in their courſes often taſte Earthy let fall a* Sludge *to the bottom of their containing Veſſel; ſuch as bring much* Clay *along with them, are apt to leave a* Lentor *on the inſides of the ſmall Veſſels of our Bodies, and cauſe obſtructions.* 4. Chalk Waters *are whiter and milkier than others, occaſion a paleneſs in their habitual Drinkers; they alſo turn* Syrup *of* Violets *green and ferment with* Acids. 5. *Stoney or Sandy Waters are known from their riſing out of the like Soil, from the ſtone pouder or ſmall Sand they let fall to the bottom, on a few hours ſtanding; for theſe being heavier than the former Sediment ſeparate aud ſubſide ſooner, and feel gritty to the Teeth or touch.*

It often happens that two or more of theſe different Earths and Salts, *enter into the Compoſition of the ſame Water, but the above Signs diſcover them as well mixt as ſeperate; Ex: Gr, Let a Water contain Iron or Steel,* Vitriol, Ochre, Calcarious Earth, Sea Salt, Nitre, *and* Allum, *Smel and Taſte, will diſcover the firſt three, eſpecially with the help of* Galls, Logwood, *and aſtringents, and waſhing Linen* &c. *The Sediment in the bottom of the Bottle or Veſſel, or with* Galls, *but chiefly Oyl of* Tartar *or lixivious Salts, will detect the firſt and fourth; the Effects of the Water on the Drinkers, or only the boyling of Meat, or laſtly Solution of Silver will betray the* 5th *and* 6th, *which at firſt equally inform us of the Exiſtence, of* Marine *Salt,* Nitre, *Sulphur, and alcaline Earth in the Water, for the firſt* Precipitates the Silver, *the* 2d *on three or four days ſtanding leaves a Purpliſh incruſtation on the ſides of the Glaſs, the fourth raiſes a Fermentation or Ebulition, like other acid Spirits, the* 3d *changes the Mixture with the ſolution from white or pearl, to a dusky colour, Amber, Brown Blackiſh, or Jet black, according to the quantity of Sulphur in the Water; as it diſcovers the proportion of Sea Salt from the various ſhades of colour from pearl to ane opac Milk white, and the ſuddenneſs of precipitation of the Silver and the Waters returning to it's firſt clearneſs; theſe* Teſts *may be depended on, till we diſover aprecipitator of Sulphur. Sometimes* Logwood *will diſcover Sulphur Steel or Nitre, when Galls and Solution of Silver fail, of which more fully after. Both Alum and Vitriol are diſcovered in Waters by a Tea made of* Lychnis Pulmariæ Sylveſtris Flore Purpureo, *call'd* ragg'd Robin, Cuckow flower, or wild williams *for it turns the firſt of a beautiful pale pink colour, which ſoon fades; the laſt of a blackiſh leaden colour, or dirty olive green. I ſhall not here anticipate the peculiarity in ſeveral waters, as the incredible alcaline property of* Wiggleſworth, *and* Cliffton *near* Aſtrope, *whoſe Salts almoſt take fire with ſpirit or oyl of Vitriol; and diſſolved in a large Mixture of diſtilled common Water, yet the Fermentation is moſt Violent.* Cheltenham *Water lying all night in the body without diſturbing it, but goes off inſtantly next morning, and gives the eaſieſt ſtools of all others; It's Salt tho' true* Nitre, *is remarkably hot in the Mouth like marine Salt, and exceeding bitter, hence tho' ſo richly and highly impregnated, yet it never heats nor chills the Drinkers like other Waters loaded with marine Salt or Nitre. Our greateſt loſs in Examining mineral Waters, is, want of* Præcipitators; *ſeveral things are recommended and aſſerted as ſuch by* Allen, Gockelius *and others, which I could wiſh had anſwered with ſucceſs equal to the Encomiums given, as that a* Nitrous Water *precipitates the ſolution of* Antimony *out of Sea Salt, in white Flakes;* Vitriol *præcipitates* Quickſilver; Vinegar *fixes and throws down* Sulphur *and* Steel, *makes* Tin *and* Copper *ſubſide;* Copper, Silver; Lixivium *of* Beches aſhes; Vitriol, Salt water, Lead; *all* diſtilled oyls, Arſenic *&c. Would theſe Anſwer, a great Part of the difficulty in examining mineral Waters would be at an end. But what I have tried and found ſucceſsful, either for* Separation, Præcipitation *or* Solution *of the ſundry parts of* Mineral Waters, *are exactly and faithfully communicated in this Vol: tho far ſhort of what is wanting to clear this excellent Subject from all difficulties. Tho' it's with pleaſure at the ſame time, that I am able to contribute ſo conſiderable a Mite, of diſcovering ſo many different ſorts of Salts, eſpecially Nitres, never found out by Ancients or Moderns, and been able to ſhow how, inſtantly to fix the Iron or Steel in Chalybeates, to determine with certainty, whence they and Sulphur Waters both fetch their principles; and obtained an eaſy infallible Mark of them in any Waters; and extended the uſe of ſolution of Silver, Galls, Logwood &c, In the Tryal of ſuch Waters: And been able better to determine their ſeveral Uſes. A few ſuch certain practical, not*

hypothetical;

helps, added by others, would ſoon help to clear and remove doubts.

It may be expected that ſome common Rules or Directions ſhould have been here preſcribed, for the right uſe of theſe Waters, but this having been briefly done in ſeveral places in the firſt Vol: Little is required here; and alſo having often declared, that I have no Notion of whats called preparatory courſes in general, and for particular caſes the preſiding or neighbouring Phyſician ſhould be conſulted. The Accidents that ſome ſeldom times may happen on the uſe of Mineral Waters, are chiefly; 1ſt *a ſudden aud ſevere* looſeneſs, *from the Waters being ſaturated with* Purging Salts, *then it muſt be refrained for ſome days; till the* Hurricane *raiſed in the Body be appeaſed, by a warming Anodyne at night, as an ounce of* Diacodium *in an ounce of* Cinamon Water, *and the next day give 10 or 12 Grains of roaſted* Rhubarb *in a Bolus with half a dram of* Diaſcordium, *and a drop of oil of* Cinamon, *or two or three drops of oil of* Cloves; *forbear Exerciſe, Malt Liquors, Green Herbs, and ſour things; Ly pretty much in Bed, drink the white Decoction alone, or with Claret, or boyled Water and Milk with a piece of Cinamon, and ſometimes a little red Wine burnt, with Cinamon, or ſome ſpoonfuls of Fracaſtorious's Decoction for a Looſeneſs; and 10 or 12 drops of Liquid Laudanum once or twice a day, according to the degree of Looſeneſs and pains, and if there is further occaſion, Boluſſes may be given, of* Armenian, *or* Sealed *and* Japan *Earths with* Diaſcordium. *If the Diſeaſe proceed from a meer* Laxneſs *of the* Bowels, *the Stools will be watery and inodorous, here bitter Reſtringents and* Aromaticks *are beſt. If it be from acrimonious Salts, the ſtools are intolerably fætid, then driers and ſweeteners, as* Earthy Alcalins *take place. If from an* Immoderate flux of Humours *to the* Bowels *let it not be ſuddenly ſtopt, then the ſtools will be very large and frequent,* Rhubarb *with proper Bracers muſt be uſed.* 2d. *Coſtiveneſs is the Reverſe of the laſt, this is moſtly the Effect of Waters that are rich of the volatile but have little fixt Salts; as chalybeates. Then Laxatives are indicated of which before in Vol: firſt. But to prevent this troubleſome Symptom, eſpecially in perſons habitually coſtive, let the uſe of the Waters be uſhered in with a laxative before, to clear the Body from Bile, Flegm, indurated Fæces, or other humours, which may hinder their right operation, and prevent theſe Humours being carried into the Blood with the Water.* 3d. A dimunition *or* Stoppage of Urine *happening during a* *courſe of* Calcarious *Waters; which is very common even in ſuch as never had* Gravel *or* Stone *before. They muſt ceaſe Drinking the Water till the fit is gone. If the pain and obſtruction of urine is great;* let Blood *in the Arm, give a* Vomit, *and either before or after, let the Perſons be put into a* Bath of Water Milk warm, *let them ſit in it up to the Stomach, from half an hour, to an hour, and repeat it as there is occaſion, after the vomit give a brisk Purge with* Calomel *and* ol: Junip: *Let their common drink be Softening, Smoothing, relaxing, ſomewhat Diuretic and Cooling, as a Decoction of* Althæa *and* Parſley *roots; or an Emulſion with com: Water,* oyl of Sweet Almonds and Sperma cati, *with the yelk of an Egg, and if the Stomach will bear it add* Bals: Capiv: *or* Ol: Juniper: *But if great heat and feveriſhneſs, with an inflammatory Diſpoſition attend, the laſt two muſt be omitted, and* Sal: Nitr: *and* Syr: Alth: *put in, in conſiderable Quanties in their room. If the Sick vomit and are reſtleſs; after Evacuations; the Salt Draughts, with a prudent uſe of opiates may ſafely be adviſed. But where the Stoppage of urine has been of ſome continuance,* Opiates *are not ſo ſafe, leſt they cauſe an inſenſibility in the* Sphincter *and* Muſcular coat *of the* Bladder; *If it be full of* Urine, *let it be drawn off by the* Catheter. *When the fit is mild, alaxative may ſuffice, with a Decoction of* Marſhmallow roots; *ſweetened with* Sugar *or Honey; and at Night give a Mixture of oyl of ſweet Almonds, Syrups of* Diacodium *and* Althæa, *and* Spt: Nitr; *with a few drops of* Liq: Laud: *But groſs Copalent Bodies require a greater* Stimulus, *inſtead of* Liq: Laud: *They muſt have vin: Milliped: and twenty or thirty drops of* Tinct cantharid: *Their Belly muſt be kept open ſome days, and they allowed to drink warm Negas, or ſmall tepid Punch; but this courſe would make miſerable work with thin meagre Habits, who for Stimulants ſhould be plied with Lubricants and Emolients, with mild Anodynes, but in all Habits proper Glyſters muſt never be neglected. Wheu the fit is over, they may return to the uſe of the Waters, but in moderate Doſes as the outletts give way, if this ſucceeds not, but afreſh fit comes on, it's time to bid good Night.* 4th. *If the Stomach is pall'd or loaded, let a gentle Vomit be given, to clear the Ventricle at once, without carrying the groſs Humours through the long Tubes of the inteſtines, to have part of them impelled the Lacteals, and taken into the Blood; ſome People have naturally larger or wider*

Strainers and Outletts of the Body, than others; ſuch as have narrower, ſhould begin with a ſmaller Doſe and encreaſe it, as they find the Paſſages widen and Diſcharge, and in the mean time keep to their firſt Doſe, till they find that go ſoon and readily off; to haſten which, moderate Exerciſe may be uſed, and a longer time allowed every Morning to drink their Water, ſwallowing it in ſmaller Doſes. 5th. *Should the Quantity of urine be unhealthly encreaſed, beyond the Doſe of Water drunk, the Body has been diſpoſed to a Diabetes before, and only exchanging that thin light Water for a more Ochry, or Ochry Calcarious Water. will do, as* Cliff, *but eſpecially* Holt *aluminous Water.* 6th. *The laxative Chalybete Waters, are found by long and much Experience, to be the ſafeſt and ſureſt cure in* Rheum *and* Catarrhs, *yet inſtances there have been, where very large Defluxions have fallen on the Breaſts of* Corpulent *and* Flegmatic *people chiefly, during a courſe of Waters. But if it's either a dry Cough, or a ſcantling of meer thin Water, or Froth with a tickling Cough, the uſe of* Thickners *and* Aſtringents *do well, as* Diacodium, Pill: De, cynogloſs: De, ſtyrac: *or* Math: *at Night. or a* Linctus *of* Syr: Roſar: Papaver: Bol: Armen: Terr: Sigillat: Japan: Sang: Drac: *or ſwallow ſome Grains of* Maſtich *and* Francineenſe *at bed time, or a* Fumigation *of* Maſtich, Benzoin, Styrax Calamita, White Amber &c. *But if in ſuch Bodies, a ſuffocating dangerous* Catarrh *ſhould happen, then muſt all means be immediately uſed by* Stimulation *and Evacuation, both to leſſen the Humours and Irritation of the Lungs, and draw the matter to other parts of the Body, by* Bleeding, Cupping *the Extreams, ſharp* Glyſters *injected,* Friction, Purging, Bliſters, *aſtringent* Gargles, Fumigations &c. *When there is a load of thick Humours on the* Breaſt *and* Lungs, *and the Cough either ſtopt or too ſmall to promote due Expectoration,* Stimulants Attenuators *and* inciders *muſt be uſea inſtantly; as a* Peuk *of* Oxymel *and* Ipococ: Bliſters, Lac Ammon: *with* Oxymel; Vin Millepid: *and* Tinct: Croc: *ſhould the* Oxymel, *occaſion a Looſeneſs give in it's ſtead* Syr: Alii: Lemon: Aq: Raphan: *C:* &c. *They will provoke Coughing and Spitting. If a* Fever *attend, beſides bleeding purging and diluting, uſe* Sal Nitre *or* Prunell: *In the Mixtures. Should a* Dropſy *and* Slow Fever *be preſent* Sal Prunell: *and* Tartar Vitriolat; *Are proper. All mineral Waters Containing a ſenſible Sulphur; have been juſtly deemed dangerous, and not ſeldom* *proved fatal in a cough; without attending to it's nature and kind. One certain deciſive Mark whither they will be helpful or hurtful, may not beuſeleſs here; and it's this, if the catarrhous Matter collected in the Lungs be not great, the Cough never ceaſes till it's all ſpit up, then it's quiet, till the Perſon eat a freſh meal, and it's Digeſtion in the Stomach be over, which is two or three hours, then the taring Cough returns and continues about one Hour, till the freſh matter be again expectorated, then ceaſes. Nor does an* Aſthma, Colliquative Sweats, Looſeneſs; Hectic, *or* Peripneumonic Fever *attend it, the habit of Body being otherwiſe well diſpoſed; it's a plain caſe that the Lungs are not tainted with Inflammation, Vomica, Abſceſs or Ulcers, the Waters may be ſafely and freely uſed. but if the above Fever attend, with an* Aſthma, Inceſſant tickling Cough *at all times,* adelicate *fine* Complexion, *ſudden* fluſhings *of the Face, eſpecially after* eating, *or any ſmall* Motion, *Thirſt* &c. *The Caſe is Phthyſical, the Lungs are tainted, and the uſe of* Sulphur Waters *is not adviſable. But if there is an* Ulcer, *without* Fever *or* Aſthma, *theſe Waters have often done amazing and unexpected cures. As light chalybeate Waters, impregnated with a little* Nitre, *have done wonders in the firſt, when drunk dayly from ſix to nine Pints, for ſix Weeks together, and a ſmaller doſe* has *not anſwered.* 7th. *Sulphur Waters drunk, often occaſion a ſlight dull pain of the Head, as ſpirituous chalybeates rich in Volatile Steel, cauſe a ſtupidity like Fumes of Ale or Wine, both are prevented by ſuch things as warm the Stomach, as Candied Angelica, Elacampane, Orange peels, Coriander ſeeds* &c. *Often chewed.* 8th. *Some very weak relaxed Conſtitutions, Females eſpecially, are ſometimes troubled with* Faintings. *In this caſe, a little* old Brandy, *ſtrong* Cinamon *or* Citron *Waters,* Dr. Stephens's *Water, or* fullers Muſch Julap, *or Saffron Tea with Sal volatile drops, moderately taken, are uſefull. Let their Mouth and Noſe be rubb'd with Vinegar, Friction of the Mouth of the Stomach, a* Toaſt of Bread *or* Biſcuit *dipt in ſome Cordial Wine, are alſo proper. Should want of Sleep ſuperveen, waſh the Head every Morning in cold Water, and the Feet at Night in warm, wherein Leaves of* Violets, Mallows, *and* Poppies *or their heads have been boyled; or waſh the Head at Night in a Decoction of* Poppyheads *or Leaves. Or for a few Nights take a Little* Diacodium *or two or three Diſhes of Tea of white* Poppyſeeds. 10th.

Should the Water relax, pall, or cool the Stomach, in Perſons of cold Conſtitutions or accuſtomed to high living, let them uſe ſome warming Strengtheners; as to eat a dry Toaſt dipt in ſome ſtrong Wine; *or drink half a Glaſs of ſome warming* Stomachic bitter Wine, *or* Cinamon Water, *or* Madera *Wine, or Pouder of* Cinamon, Cloves, Ginger Nutmegs *&c. With Sugar; or the above Candied Spices or Comfits. To theſe* Gouty People *ſhould add* Snakeroot *and a little* Species Diambra; *and have them always ready in Pouder, Electuary or Bolus's, to take with a Glaſs of warming bitter Wine, in caſe they ſhould be viſited with a pain of the* Stomach, Bowels, Breaſt, *or other parts of the Trunk of the Body. If theſe fail, let* Bliſters *be applyed to the Extreams, or places where the Gout uſed formerly to ſeat it's ſelf. Gouty People in the decline of Life eſpecially muſt avoid coſtiveneſs in a Courſe of thoſe Waters, nor can I ever adviſe the uſe of the cooling nitrous purging Waters to ſuch; or of the calcarious Waters to gravely or icteritious Perſons, for they muſt often be of fatal conſequence.* 11th. Hyſteric *People ſhould take ſome proper Medicines along with them in caſe they may have ſome Fits, as the* Gumm Pills, Tincture of aſſafætida *with* Sal Volatile, *or* Spirits of Hartshorn; *or Pills of* Aſſafætida *and* Caſtor *with ſome drops of* Liquid Laud: *to be taken at Night* &c. 12th. *If the Waters take away the Appetite, uſe Warmers, as in a cold Stomach.* 13th. *Where the Waters take a reſty fit and go not duely off by Stool or Urine, but bloat up the Body, give a brisk* Hydrogogue *Purge or two, and drink more ſparingly after, till they get a full vent. Several other Caſes might be added, but I have ſo often handled this part in the firſt Vol: That I have no further occaſion here.*

AN EXPLANATION

Of ſome WORDS, *in the following* TREATISE.

The following Work being deſigned for the common Service of Mankind in general, it is neceſſary that it be accommodated, as much as Poſſible, to common Capacities; and therefore having frequent Occaſion to uſe ſome Terms of Art, which may require to be Explained, we think it proper to inform our Readers in what particular ſenſe we uſe them in the Enſuing Treatiſe. A Catalogue of which you have as follows, with our Explanation of them.

A

A*Brade*, inſenſſibly ſcraping, and wearing away the ſide of the Veſſels of the Body.

Abſorbe, to dry, and ſweeten, or drink in a Liquid.

Abſorbents, dryers and ſweeteners.

Aceſſent, diſpoſed to turn Acid.

Acid's, That which has a ſharp, four Taſte and turns Syrup of Violets red, and Oil of Tartar, or ſpirits of Harthorn Green.

Æquilibrium,	an equal balance or weight.
Alcaly *Alcaline* }	In treating of Mineral Waters, and their Contents, we mean not by this, ſuch Urinous, lixivious, volatile, ordorous, cauſtick, ſalts, as are the Product of Art from Animals and Vegetables: But natural, fixt, ſmelleſs, taſtleſs, mild, aſtringent, Minerals, or Foſſils, which turn ſyrup of Violets green, and ferment with Acids as Chalk, Limeſtone &c.
Alterative,	That which inſenſibly alters the Juices of the Body to Health or recovery, correcting ſome Diſorders therein.
Analyſis.	The ſeparating of mixt Bodies, of Minerals or Foſſils, from Water, and reducing them to their different Principles.
Anodyne,	eaſing pain and diſpoſing to ſleep.
Arthrytic	Pains, all Pains of the Joints, but chiefly thoſe of the Gout and Sciatica.
Appoſition,	application, or attachment of nouriſhment tothe ſides of the Veſſels.
Aſtringent,	Binding, Strengthening, or Contracting.
Attenuate,	to ſubtilize and break groſs Humours into ſmaller, and leſs Coheſive parts, and ſo fit them for Motion, circulation, and excretion.
Atrophy,	the inſenſibly pining or waſting of the Body, or any of it Parts.

B

Baſs,	or Shale a black Mineral Subſtance, like ſoft, coarſe, black Slate, which being expos'd to the Air, falls firſt into ſmall ſhivers, then into black or blackiſh brown Duſt: It conſiſts of much Earth, Vitriol and Sulphur, often produces Chalybeat Waters alone, Coal is always cover'd with it.
Brazil, *Braſſil*, }	is a yellow, reddiſh, brown or white Mineral, as heavy as Mettal, lying in the Earth in great Maſſes or Lump it conſiſts chiefly of Sulphur, ſome Earth, a little imperfect Metal, ſometimes a little Mercury.

Sulphur Waters are moſtly, if not always, produc'd from Beds of this: And when it his near, or mixt with Shale, they produce Sulphur Chalybeate Water. When broken it Sparkles like Gold, Silver or Copper Oars, or thrown into fire, it has a ſuffocating ſmell of Sulphur, with a blue Flame It's called *Galæna Inanis* or *Pyrites argenteus Aureus &c.*

C

Cachexy,	an ill habit of Body from its Nutrition being depraved
Calcarious,	of, or belonging to Limeſtone.
Cachochemy,	a bad ſtate of the Blood, and vital Juices,
Catameniæ,	the Menſes.
Catarrh,	a Defluxion of ſharp, watery, or ſizy Humours on the Glands of the Head and Throat chiefly.
Cathartic,	that which Purges.
Capillaries,	Veſſels in the Body that are finer than Hairs, whether they contain Blood or Lymph, and are often called Evaneſcent Veſſels.
Chalybeate,	is a Water impregnated with particles of Iron or Steel, and therefore contain Vitriol, Sulphur, and Earth, the principles of Iron, hence they are both abſorbent, and deobſtruent, the firſt from the largeneſs of the Pores of that Metall or it's Earth, at which all kinds of Salts, even groſs ones, eaſily enter, and inſinuate themſelves therein, and, in their Entry expell that ſalutray Juice, or Oil of Sulphur, which when they are Drunk, put the Blood in Motion. By which Property Chalybeats eaſe the Blood of hurtful Salts, and furniſh it with Sulphur. But their Metallic particles being ponderous, give the Blood a freſh *Momentum* or force, hence their Uſefullneſs in all ſizyneſs, poorneſs, and thickneſs of our Juices in a Languid Circulation, Sluggiſhneſs, and Reſtineſs of the Veſſels.
Chronic	Diſeaſes, ſuch as are of long Continuance, as Scurvy, Leproſy.

Cauſtic,

Cautſtic,	That which deſtroys the Texture of the Parts.
Coagulation,	The thickning of any Juices of the Body.
Chyle,	that white Milky Juice into which our Food is turned in the Bowels, and ſent of by the Lacteals to be mixt with the Blood.
Chylification,	the act of turning Food to Chyle.
Chylopæia,	The parts concern'd in making, receiving, and carrying the Chyle to the Blood.
Corroborant,	Such things as increaſe Strength, or Contract the parts.
Corrobarative,	
Corrode,	To gnaw away inſenſibly.
Defœdation,	Defilement,
Deterge,	to carry off ſizy Humours,
Depoſites,	let's fall.
Diarrhæa,	a looſeneſs.
Dilated,	widened.
Dilalibility,	capable of being widened or rulaxed.
Dilute,	to thin the Humours more,
Diuretics,	ſuch as promote the Secretion and Diſcharge of Urine,
Dyſentery,	blody Flux.

E

Earth,	a ſimple, fixt, hard Body, or Mineral, indiſſolvable by Fire, Water, Oil or Spirits.
Ebullition,	ſee Fermentation.
Elaſtic,	ſpringy.
Emaciate.	to pine and waſte,
Emenagogics,	ſuch things as promote, or provoke the Menſes.
Emetic,	that which Vomits.
Excoriate,	to tear off the Skin.
Excretion,	or diſcharge from the Body.
Exhalation,	The boyling away of Water ſlowly over the Fire, or waſting it inſenſibly in a ſand heat, or Expoſing it to the Sun or Air in an open Veſſel, till it is ſpent; or when we ſpeak of a ſpirit, it is the Diminution or loſs of that Principle inſenſibly, by heat, ſtanding, carriage or keeping.
Evaporation,	

Extravaſation,	when the Blood, or other Juices of the Body, break their Veſſels, and diſcharge themſelves into ſome Cavity under the Skin, among the Muſcles, or throw it quite out of the Body.
Fermentation, *Ebullition*, *Effervescence*,	the two laſt much ſtronger than the firſt, which is a viſible ſlow Motion in different Minute Particles of matter in the Water, raiſed from ſomething of a contrary Nature put into, and mixed with it.
Ferruginous,	the ſame as Chalybeate Waters that partake of the Nature of, or have particles of Iron contained in them.
Filtre.	To ſtrain the diſſolved Salts of any Water, through Cap paper, to ſeparate them from the Earth, or to clear the Water from ſome Impurities in it.
Fixt Parts,	What remains after boyling, or other moderate heat of the Fire.
Fœtid,	Stinking.
Foſſil.	Any ſort of Mineral hid in, or dug out of the Earth.
Fluids,	comprehends all the Juices of the Body, as Milk, Blood, Bile, Lymph, Urine, Serum &c.

H

Hypotheſis,	an opinion, or principle, from meer Imagination.
Hemorrhage,	an unnatural, or unhealthy Diſcharge of Blood.

I

Ichor,	a thin Watry Humour, or reddiſh Lee.
Impregnated,	Water riſing up with Mineral Salts, Earths, Mettals, or Sulphur in it's pores.
Immerſion,	dippping over Head.
Immeability,	an unpaſſableneſs of the Blood in the Veſſels.
Incide,	to cut, or break, ropy, ſizy Humours, and leſſen their Coheſion.

Interſtices,	the ſmall ſpaces between the conſtituent Fibres of Veſſels, Membranes or Muſcles.
Irritation.	ſee ſtimulation.

L

Lacteals,	very ſlender Veſſels which carry the Chyle from the Inteſtines to the common Receptacle.
Lateral,	of or belonging to the ſide,
Lateritious,	like brick duſt.
Laxative,	Gently looſening the Belly.
Leucophlematia,	a white ſoft bloating on the ſurface of the Body,
Lientery,	a looſeneſs wherein the Food is diſcharged by ſtool but little alter'd.
Lixivium,	the ſolution of any Salt boyled to a brine, till it is cover'd with a clear ſcum or pellicle.
Lymph,	a thin clear Humour ſtrained off, by the Glands, from the ſerum or Watery part of the Blood, in all parts of the Body, for thinning the Chyle, before its mixt with the Blood, and for Nutrition.
Lymphatics,	very ſmall, clear, Veſſels, riſing out of the Glands, and carrying the Lymph to it's reſpective places and uſes.

M

Malax the Food.	moiſtening and ſoftening it.
Marcaſites,	are either ſuch Minerals as contain Metallic parts, or a meer body of Sulphur, with a little Earth.
Medical, *Medicinal*,	Waters, are ſuch as, by long Experience, are found more efficacious in preventing, abating, or curing of Diſeaſes in Animal, but eſpecially human Bodies, than common, rain or other Waters.
Menſtruum,	any Liquor that is uſed for diſſolving particular Bodies, or extracting their Virtues.
Meſentery,	that Membrane by which the Inteſtines are Tyed to the Vertebræ of the Loins.

Minera, the Ore of any Metal, as Iron, Copper &c.

Mineral Waters, are ſuch as contain or carry in their pores, a Mixture of Salt, Sulphur or Earth &c. Whether volatile or fixt.

Minerals, what ever is hid under the ſurface of the Earth, but chiefly ſaline, ſtoney metallic, earthy, &c. Subſtances.

Mineral Spirits, are the very fineſt, ſubtleſt, ſmalleſt Particles of Minerals, with which the Water, and it's Air is impregnated, (whether they are the Effect of Abraſion, Diſſolution or Fermentation,) being ſmaller than the Pores of any Veſſel or Body, they eaſily paſs thro', and fly off. Theſe ſpirits, ſo farr as we yet know, are only the Particles of Iron, Vitriol, Sulphur, or a meer compreſſed, ſtrongly Elaſtic Air; the laſt we find common to all Springs: Hence their Water weighs lighter, at the Fountain, than when they are carry'd at a diſtance, or have ſtood ſome time.

Minute, very ſmall.

Momentum of the Blood, it's force againſt the Veſſels.

Mucous, ſlimy *Mucilaginous* or *Mucous Coat*, the down on the inſide of the Gullet, Stomach, inteſtines and bladder.

N

Nixus, } an Inclination of one Body, or part of it, towards
Niſus. } another.

Nutrition, Nouriſhment.

O

Ochre, that ſubſtance which Chalybeate and Coal Waters let fall, and leave in their Baſon, Courſe, or Receivers, it is either red, yellow, or brown, and when dried and calcined, affords much Iron.

P

Pedilavium's,	Baths for the Feet.
Perſpiration,	the inſenſible Diſcharge of the ſuperfluous Juices of the Body thro' the Pores of the Skin.
Perennial,	Springs that flow continually at the ſame ſpeed.
Pervious,	open, paſſable.
Periſtaltic;	alternate contraction and dilation of the Guts.
Petrifaction,	turning Moſs, Hay, Graſs, Sticks or Leaves, into Stone.
Phlebotomy,	blood letting.
Phænomena,	whatever appears remarkable in the Proceſſes of Experiments upon Waters, eſpecially, in their Colourations.
Plethora,	fullneſs of good Blood, or other Juyces good or bad.
Precipitate, *Precipiation*,	is the ſeparating from Water any Mineral, or Metallic matter that had been diſſolved in, and mixt with it, and throwing it down to the bottom of the Veſſel.
Pyrites,	any ſtrong or petrified ſubſtance, containing chiefly Vitriol, Sulphur; and a little Earth, with an imperfect Metal, it ſhines when broken, burns blue in the Fire, and turns hot in Water.

R

Raptus of the Blood,	a ſtronger force or current of the Blood to any part.
Rarefaction.	the Fluids taking up a larger ſpace in the Veſſels, without any addition, by heat, or great motion.
Relaxion.	looſening or ſlackening the Tone or Tenſion of Fibres Nerves or Muscles.
Recrement.	ſome ſuperfluous matter that is mixed with other that is uſefull.
Reſiduum.	Remainder of any thing.
Repletion.	Fullneſs.
Rubric.	Iron Earth, ſo called for it's reddiſh Colour.

S

S

Salt,	a ſimple Foſſil which flows in the Fire, and diſſolves in Water.
Saline Efflorеſcences,	a light, white, mealy, ſalt matter, appearing on the outſide of Mineral ſubſtances, as Rocks, Brick or Stone Walls and like hoar Froſt, Snow or down.
Sanies, *Sanious*,	a thick and bloody matter.
Sanguiferous,	Veſſels that contain Blood only, as Veins and Arteries.
Saturated,	full or loaded.
Schirrus.	a hard, obſtinate, painleſs ſwelling, often turning to a Cancer.
Sediment.	either that which falls to the bottom of the Glaſs, Veſſel, Receiver, or Courſe, by ſtanding, or mixing ſomething with the Water, as Galls, ſugar of Lead, ſolution of Silver &c. Or the dry Matter left at the bottom of the Veſſel after the water is boyled, or evaporated away.
Secretion,	the ſeparating or ſtraining off ſeveral Juices from the Blood, by the glands.
Serum.	the Watry Part of the Blood.
Solids.	comprehend all parts of the Body, except Blood and Juices.
Spasmodic.	Convulſive Motions.
Sphincter,	a Muſcle which ſhuts up any cavity of the Body.
Stimulant.	that which heats, and rouſes, the dull, ſluggiſh Parts or Veſſels, provokes them to Motion, and Puſhes forward their Juices.
Stimulus.	Irritater, or Rouzer.
Styptic,	binding
Subſides,	falls down.
Sudorific,	that which ſweats.
Supernatant,	ſwimming on the ſurface of the Water.

T

Temperies.	Temperament.
Tone.	the State or Diſpoſition of the Veſſels of the Body, or any part of it.

Tranſude.	gently ſweating through.

V

Vellication,	or to Vellicate, ſee Stimulation, or *Stimulant.*
Velocity,	Swiftneſs.
Viſcera.	Bowels but chiefly the Liver, ſpleen, ſweet bread, Kidneys.
Viſcid, *Viſcidity*,	a Sticking or Gleuineſs in the Blood or Juyces.
Vitriolic	Waters, ſuch as contain Vitriol, either in a volatile, or fixt State.
Volatile.	what flies off in the Air, and is loſt to us.

U

Uropœia,	the parts concerned in ſeparating, carrying down, and diſcharging the Urine.
Uterus.	the Womb.

THE
NATURAL, EXPERIMENTAL, and MEDICINAL,
HISTORY
# of the moſt NOTED
MINERAL WATERS
In the Counties of
Durham, Northumberland, Cumberland, Weſtmoreland, Lancaſhire, Cheſhire, Staffordſhire. Worceſterſhire, Warwickſhire, Gloceſterſhire, Oxfordſhire, Barkſhire, Cambridgeſhire, Northamptonſhire. Lieceſterſhire.

PART I.

The Natural HISTORY.

A *Natural Hiſtory of Mineral Waters* implies, an Account of their Situation, Courſe, Riſe, Soil, and the Minerals which they waſh, and with which they are impregnated; with a great Variety of repeated Experiments and Obſervations, in order to diſcover their Contents, their Virtues, and Uſes. In pointing out, and determining theſe, it is neceſſary that the Hiſtorian proceed on ſelf evident Principles and not on Hypotheſis Theory, Supoſition, or abſtract Reaſoning. In the purſuit of ſo important an Affair, great Care ſhould be taken to avoid all unreaſonable Prejudice againſt, or Attachment to, any one particular Water. Every thing foreign to the ſubject ſhould be excluded: And when once the Rubbiſh is removed, a right Foundation laid, and material Objections are

Anſwer'd, all wrangling and Contention ſhould be diſcarded, which may divert the mind from a cloſe and impartial Purſuit of the point in hand. Nothing ſhould be admitted but *Facts*, *Obſervations*, *Experiments*, and *Solid Reaſoning* upon them. This requires a *Genius* capable of ſoaring above the few trite, & common ſet of Experiments and of dictating, and purſuing, ſuch new Methods, as may afford greater Light, and Certainty, in this dark, and intricate ſubject; nor ſhou'd any of the Means of acquiring a clearer more diſtinct, and fuller Knowledge of it be deſignedly concealed.

When one ſets out in the *Examinatiou* of *Mineral Waters*, He ſhould not think it enough that he is provided with a ſmall portable *Apparatus*, and knows exactly how to uſe it, but he muſt be ſo far a *Naturaliſt*, as to be acquainted with *Minerals*, that he may know ſuch as the waters are ſtrained through; He ſhould alſo have been converſant in decompounding, and ſeparating thoſe *Minerals*, to know the principles they conſiſt off, and what kind of *Minerals* are diſſolvable in, and commiſcible with common Water, and what are the ſigns of each Mineral, or principle mixt with Water, whether one, or more of them, impregnate that water; how he may fix the *Volatile* parts, and ſeparate the *fixt*, bringing all under the ſenſes, without altering or changing them into other ſubſtances, or Matter. He ſhould have particular *Characteriſtics* to each. And in order to the medical part, he is ſuppoſed to have ſtudied, and is acquainted with, the uſes of thoſe ſame *Minerals* in Medicine. In order to which, it will be proper to have made, a great Number of previous, *Experiments*, on diſſolvable and indiſſolvable, *Minerals*, which he has mixt and ſeparated, chiefly ſuch as he has heard off, or expects to find mixt with *Mineral Waters*. He muſt be ready, Judicious, and exact, in making, and attentive to the Reſult of his *Experiments*, not too opinionated on one hand, nor Credulous on the other. When he comes to a ſpring that he deſigns to examine, before the proceſſes are begun, ſome Conſiderations, and obſervations are requiſite to be made, in order to inform the Judgment, and enable to compile a tolerable natural Hiſtory. As.

Firſt does the Water tinge it's *Baſon*, *Spring* or *Courſe*, with any Colour, or Colours, different from common Water? 2 does it let fall any ſediment, and of what colour is it? 3 does it throw up a ſcum and of what colour, and conſiſtence is it, and when taken off, how ſoon does it gather again? 4 does it change the Colour of things blown, fallen, growing or caſt into it, as Stones, Earth, Sticks, Graſs, Straw, Rags &c. and to what colour does it change them, Black, Yellow, White, Brown or Red? 5 does it petrify things in it's Spring, or Courſe, or under it's Spring? and if it do, are the petrifactions fine or courſe, by Adheſion, Incruſtation, or Penetration of the Subſtance? are they Vitriolic or Calcarious? 6 are there any peculiarities obſerved about that ſpring, at certain ſeaſons of the Year; or at or before Changes of weather, or with regard to it's medical uſe? 7 what quantity of Water does it diſcharge in any given time? 8 does it fluctuate in Quantity, Colour, or Strength, by Rains, Drought, Fogg, Sun, Wind &c.? 9. Out of what Soil does it riſe. Gravel, Clay, Sand, Marle, Shale, Brazil, Moſs, Limeſtone, Gretſtone, Freeſtone, Blewſtone &c? 10 does it run into the *Baſon*, as other common Springs, or does it boyl up impetuouſly; and if the laſt does it boyl up at a conſtant ſpeed, or by unſteady Eruptions? does it bubble and bludder, does it bring large bubbles of Air along with it? 11 does it make the Ground it Waters or falls on, more fruitful or barren? 12. do it's affect the colour of Mettals on the cloaths, or in the Pockets of people near it? 13 does the Water ſend forth any Reak, Smoak, or viſible or ſenſible Exhalations at all, or at any one time more than another? 14 what *Mineral*, *Metals*, or *Foſſils* have been dug up, or found in the *Earth* near, behind, or under the Spring? 15 do any *Animals*, more eſpecially frequent that Water, and what are they? 16 have any Remarkables been noticed at or near the ſpring, upon or under the ſurface where it riſes? 17 does the Water come up with any particular Sound or noiſe, as of a drum, Caſcade of Water, Groaning or Grumbling &c. 18 what ſmell and taſte has the Water? 19 how long has it been known, or uſed medicinally? by what Means or accident, or on what Occaſion was it's medicinal vertues diſcovered? 20 in the Cure of what Diſtempers has it been chiefly emminent, and found ſucceſsful? 22 has it maintained it's firſt Reputation ever ſince it was found out? or if it was diſuſed, was it from a want of healing virtue in the Waters, inconſtancy of Peoples Tempers, male application or irregular uſe of them, or ill Treatment of the ſtrangers? 23 how does the Water operate by Vomiting, urine or Purging? 24 is it intenſely cold, temperate, or tepid? 25 how does it affect it's Drinkers, does it make them chearfull, brisk, or dull and heavy, are they intoxicated by it, or ſeem lighter and quicker? 26 has it been obſerved a ſpecific in any one diſtemper? 27 how is it ſituated for the convenience of Company, does it ly to the Morning or evening Sun, bleak and cold, or temperate and dry? 28 whether does the Spring face W. S. E. or N 29 is it at the foot, middle, or top of a Hill or Aſcent, or in a Vale? 30 in what Quantity; at what Diſtance is the Water drunk to the greateſt Benefit? Theſe Queries I deem not impertinent, that joyning Experience, and Experiments together, the Subjects requires both helps, and we muſt appear fitter for the work when provided with both, ſo our reaſoning will not be hypothetical, but from Facts and Experiments perceived by the ſenſes, and Concluſions rightly drawn from them will be juſt and clear.

Chalybeates being among Mineral Waters, as Iron among the Metals, not only the moſt numerous, and plentifull, there being no County or corner of a Country in *England*, without one or more of them, but alſo of the moſt extenſive uſe and ſervice in the Cure of *Chronic Diſeaſes.* I ſhall therefore begin with the Natural Hiſtory of a few of them; for the Tribe being endleſs, I ſhall leave the Curious to Examine thoſe within their own Diſtricts, by the Experiments and Methods, hereafter laid down and practiced, to diſcover which of them are the briskeſt, lighteſt, moſt invigorating and exhilerating, ſuch being always preferable, when their uſe is indicated. I begin then with.

Latham Spaw in *Lancaſhire*, it lies in a charming ſweet, and in ſummer, dry, large valey, in the Mannour of *Latham*, within a quarter of a Mile of the Houſe, the ancient ſeat of the Earls of *Derby.* It was formerly called *Maudlen* Well, and a Milnſtone was laid in the bottom of it, at about a fathom Depth, through whoſe Hole in the middle, the Water conſtantly boyling up, and riſing with ſome Force and Rapidity, brought up with it plenty of *Sand*, and great quantities of *Cockle* and *Periwincle Shells*, which rendred it very troubleſome to the Drinkers, till the Proprietor took up that Stone, and put down others with ſmaller Holes, which put a ſtop to the riſing of thoſe unwelcome Mixtures. The Well was at the ſame time wall'd about, and covered, to defend both it and the Drinkers from the Injuries of Weather, had a proper Baſon made, and was paved about with Freeſtone, and a ſtone Gutter laid to carry off the ſpare Water to the Highway which lies on it's Northſide. This being the only clear pure cryſtaline Water near that place (all others being thick, black Moſs Water) the Neighbourhood convert it to Domeſtic uſes. It's Baſon is ruſty, and has a little Ochre in it's courſe, the ſpring being brisk, boyling up, and affording plenty of Water, it ſeldom is covered with a ſcum in the Receiver. It has convenient ſeats near it for the eaſe of weak and weary Drinkers. At a little Diſtance a croſs the high road, are made fine Walks for both ſexes, with other conveniences planted thick on all ſides with Trees which yield a moſt amiable and reviving ſhade, but for all theſe Charms of both Nature and Art, the inconſtancy of Peoples Humours, and later Diſcoveries, of ſeveral others of the ſame ſort, have brought it into diſuſe, tho' it has done many ſurprizing cures, and had extraordinary ſucceſs in the *Stone* and *Gravel*, pains of the *Kidneys* and *Bladder*, and *Ulcers* there: Obſtinate pains of the *Stomach*, fluſhing heats of the *Head* and *Face*; ſtraitneſs and compreſſion about the *Cardia*, old *Aches*, *Colicks*, pains of the *Back*, *Uterus* and *Groin*, from Bladders of Water collected in the Bely, which this Water brought away, it is ſovereign in *Obſtructions* of any of the *Viſcera*, and for inward or outward *Sores*, *Strains*, *Bruiſes*, *Vomiting* or *Spitting of Blood*, *Coughs*, *Aſthma*, *Scurvy*, *Cachexy* and begining *Dropſy*, *Worms*, *Scrophulous Habits*, *Palpitation* of the Heart, *Menſes* obſtructed, depraved vitiated, diminiſhed, *Fluor Albus*, *Hyſterics*, *Hyppo*, *Looſeneſs*, Dyſentry, hepatic flux, Lumbago &c. * The Water is exceeding clear, has a pleaſant, brisk, pungent Taſte, Sparkles like Cyder when taken up, weighs lighter than common Water, greatly and immediately adds freſh Life and Spirits to the Drinkers. It riſes out of 1 Corn Mould, 2 White Sand, 3 Marle, 4 Shale and Iron-Stone 5 near it is Coal, it's Perrennial.

Knowſley Spaw, was firſt diſcovered in 1727 by Ditchers working there, it's a fine clear, light ſpirituous Water, and if drunk to four Pints, is ſaid to be laxative, taſtes and ſmells of Iron, both it and the laſt, curdle Soap when freſh taken up, but not Milk, leaves a little

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* Dr. *Borlaſe* of *Cheſter*, Publiſhed his *Latham* Spaw in 1670, at *London*.

Ochre both in it's *Baſon* and *Courſe*, is not a ſtrong Spring, has a ſcum on the ſurface of the Water below the Receiver, is a powerful Diuretic, very light, encreaſes Appetite and Digeſtion; always diſcharges alike quantity of Water in the like time, without being viſibly affected by Rains or Weather. It ſprings up on the top of a charming pleaſant Aſcent, in the Park of the right Honourable *EDWARD Earl of Derby*, it riſes out of a dry hard Soil which abounds with *Iron Stone*, near the place was lately dug up great quantities of Cynders from ancient Iron works: ¼ of a Mile diſtant from this, riſes a ſmall ſpring called the ſweatning Spaw, it's exceeding ſoft pleaſant Water, and ſaid to promote perſpiration even to ſweat.

Bournley Spaw riſes out of a thick Mountain of Shale, or Baſs and Iron ſtone, on the E: bank of the River or Brook *Calder*, it Springs up into a very ſmall neat Stone Baſon, which contains not above a quart of Water, weighs lighter than common Water, taſtes and ſmells furruginous, but agreeable and light; affords about five Gallons of Water in an Hour, leaves ſome little Ochre below the Baſon, it will not bear ſoap, but affects not Milk, it's noted for Stone and Gravel. About 500 Yards S: W: from this, on the W: ſide of Calder, riſes another Spring called bank houſe Spaw, which is a Meagre thin Chalybeate, riſing from ſome thin ſtrata of the ſame Minerals with the laſt, both are drunk from three to Six Pints.

Hanbridge or *Townley* Spaw (tho' not of this claſs, yet from it's vicinity, we take it in here) the laſt name it has from the late Curious and ingenious *Rich. Townley* of *Townley Eſqr*: near whoſe houſe, and in his ground it is, he put down it's Baſon, paved it about, and compaſſed it in with a low ſtone Wall to keep off Cattle, and preſerve it clean The firſt name it has from the Bridge which it ſprings up a little beyond, on the right hand of the Road from *Bournley* to *Townley*. The Water ſerves all houſe uſes, riſes out of a Stoney Gravel, is a plentifull Spring, weighs the ſame as common Water from which it differs only in being ſomewhat more impregnated with a Nitrous Salt.

Lanſhaw Bridge Spaw near *Emmot* two Miles from *Colne*, riſes up on the Road ſide out of a low looſe marſhy Ground, has an Agreeable Irony Taſte, and a ſlight ſmell of Sulphur at the Spring, where it weighs ſomewhat lighter than common Water, and leaves ſome Ochre. *

Whitecar Spaw, near *Trales*, is a very clear, brisk, Chalybeate, covered with a variegated Scum, and leaves much Ochre in it's courſe. It rather binds, than opens the Belly, curdles Soap, but not Milk, was at firſt diſcovered accidentally about 1640 by Ditchers, among whom was a Boy with many old ſores on his Legs, which with many others ſince, it perfectly cured, by frequent waſhing in it.

Lancaſter or *Sales Spaw*, diſcovered by Dr. *Liegh*, is a clear but ſlow Spring, runs always at the ſame ſpeed, let's fall ſome Ochre in it's courſe, curdles Soap but not Milk, is a powerful Diuretic, when drunk to four five or ſix Quarts, is ſaid to purge and ſome it Vomits, riſes out of Gravely Clay, and has been noted for the Stone.

Wigan Spaw, has been long uſed, leaves much Ochre, rarely Vomits, ſeldom Purges, agrees with the laſt in all Reſpects.

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* The Buſtle Dr. *Liegh* makes with theſe three Waters, in his *Natural Hiſtory of Lancaſhire* P. 37 and *Seq.* Made me more Solicitous, Minute, and Tedious, in examining them. as to the *Bituminous*, *Exalted Sulphur*, *Scarlet Sediment* which Mr. *Townley* and he obſerved, I found it only rich Ochre and nothing elſe, for had they known how to fix, and extract the Steel inſtantly they would have found none of that red ſediment after. His *Natron* which liquifies in the Air like Salt of *Tartar*, ferments with Acids, and has a lixivial Taſte;, is only pure marine Salt, the other Salt is *Sal Calcarium*, both cryſtalize as readily as the Mineral Salts of any other Water, when rightly prepared, and their Cryſtals as perfect, as any. And for their ſmell of Natural Balſam, and that of Horſe parſley ſeed, which he obſerved in another; I alſo exhaled one Water whoſe Sediment ſmelled exactly of Hawthorn Flowers, and another the ſediment ſmelled exactly of Horſe parſly. but upon repeated Evaporations to find out the Cauſe of it I could never find either ſmel again. As to *Hanbridge* Water, I will venture to clear it from *Vitriol* ſenſible *Sulphur* and *Natron*, all which he affirms it hes, It's Salt is only *Sal calcarium*;

Inglewhite Spaw, is the product of *Shale* and *Brazil*, is both a ſtrong Sulphur, and Chalybeate Water, Purges not, except drunk with Salts.

At *Moſshouſe* near *Maudſley*, is a noble light Chalybeate, it provokes urine powerfully, and almoſt inſtantaneouſly, but when carried quickly only a Mile from the Spring, it was then of equal weight with common Water. It has for a Baſon, the hollow'd trunk of an old Tree put down, in which the Water riſes two foot above the Earths ſurface, and comes out of a Hole bored, like a ſmall ſpiggot, it has been uſed medicinally time out of mind, and juſtly Vies for the lighteſt and powerfull Chalybeate in thoſe parts, but muſt be drunk at the Spring, ſince it's ſpirit is ſo brisk and volatile.

At *Liquoris green*, a Mile from *Chorley* near the *Preſton* Road, riſes up a Chalybeate into a very good neat Baſon, taſtes harſh, and leaves monſtrous Heaps of *Sludge* all the way, till it reach the Rivulet below.

At *Chorley*, from under the Caſſway at the E. end of the Town, riſes up into a neat Baſon, a very pleaſant, clear, light ſtrong Chalybeate. At the Weſt end of *Bolton* Town, on the right hand. coming in from *Chorley*, a little up a narrow Lane, within a Graſs cloſe, is another, which in it's Courſe below, let's fall much Ochre, and throws up much ſcum variegated. Between *Bolton bridge*, and *Fogg bridge*, in the way from *Bolton* to *Bury*, riſe up two or three more. near *Hiltons* of *Hilton Eſqr*: is another. one by the Water ſide at *Stock port*, called the Millars Spaw, which is very ſtrong and has been uſed long, but lying on a dangerous precipice, it's hard to come at. near it is *Dawbank* Spaw, with many others in that Neighbourhood. one or two by *Mancheſter*. At the top of *Quarryhills*, on the S. end of *Liverpool*, from the bottom of a Stone Delph, ouzes out off a very hard Coarſe freeſtone, an exceeding ſlow ſpring of a ſlight Chalybeate, with Galls it gives a faint Violet blew, which after twenty four hours ſtanding, precipitates a little red Pouder, the Supernatant Water being ſtill of a fine Violet blew. the other tinging ingredients ſcarce altered it, it's therefore a pure fine Water, having ſcarce any Earth or Salt in it, only a little Vitriol.

Lunt Spaw near *Sephton,* is lighter than common Water, when it was carried ſeven Miles to *Liverpool* the ſame day, it ſtruck Purple and precipitated with Galls, but not with Logwood. The Water next day poured out of a Bottle that had been well corked, gave the ſame Colour with Galls, but that which had ſtood all night, in an open Bottle tinged not. A little below *Sephton* in the next cloſe is another weaker Chalybeate of a more diſagreeable Taſte, from not taking care of the Spring. $\frac{1}{4}$ of a Mile from Sephton, is *Hulmgreen* Spaw. But the lighteſt of theſe, and that which has the leaſt adventitious Mixture, is Mr. *Gelders* Spaw, it riſes up in a flat wet Ground, and cannot clear it ſelf ſo well, hence it's not ſo quite agreeable to the taſte. *Holand* Spaw which Dr. Liegh boaſted off for it's load of fixt Vitriol, is now deſtroyed and loſt, it was then a Coal Sough, therefore not to have been tryed as a Chalybeate, whatever it might be for a vitriolic.

Wigan and *Browſley* burning Wells are both loſt, one for want of care, the other on purpoſe. Mr. *Eccleſtons* Spaw near *Preſcod* is another good Chalybeate, lighter than common Water at the Spring. but turns white by carrying.

At *Brockhole* near *Preſton* are two, the upper, and nether, the firſt ſix grs in a Pint lighter than common Water, the laſt 22 grs it brought the Spirits in the Thermometer down to 118, the firſt to 114 it's a very clear, light, ſparkling, pungent Chalybeate, this is by far the beſt of that kind about *Preſton,* and indeed inferior to very few; it riſes out of a ſtrong Clayie Ground, brings ſcarce any thing with it, beſides it volatile ſteel, but like all the beſt of the Tribe, muſt be drunk at the Spring, or it turns muddy and whitiſh.

There are others in this County beſides theſe, as at *Larbrick,* *Plumpton,* *Middleton,* two on a Moor between, *Hornby,* and *Wharton,* two on *Dudden Sands* beyond *Ulverſton.* ſeveral among the *Fournes* Mountains, and indeed over all the neighbouring Shires, one at *Drig* oppoſite to *Raven Glaſs* one at *Wigton,* one at *Carſlile* *Stockbond* Well on the top of Croſsfell inferior to none in England. if drunk at the Spring. it riſes up among great ſtone Rocks and Moſs, on the Weſt ſide of that Summit; others at *Greenholm,* near *Orton,* *Banton,* *Croſsby* &c. On the top of *Helvetmoor* near *Durham,* riſes up into a neat cover'd Baſon, a Coarſe Chalybeate whereon

Dr. *Wilſon* wrote his *Spadæcræna Dunelmenſe*, it's as heavy at the Spring as when carried, is a coarſe, harſh, heavy Water. Another riſes up a little out of the City into a neat Stone Baſon, on the Road to *Hartlepool*, one at *Wiſſingham*, one at a little Diſtance called *Haliwell*; a noted old one at *Bernard Caſtle*. *in July* 1737 *I was favoured with the following account from the Revd. and Ingenious Dr.* Sharp *at* Rothbury *in* Nothumberland. *about two Miles N. W. of* Rothbury, *within a* 100 *Yards of the head of* Blackburn, *in the wildeſt and moſt deſolate part of* Rempſide Moor, *among Rocks, and Moſs, and Bogs, unpaſſable, and inaceſſable except in a dry ſeaſon in the Summer time, there ariſes a Water ſtrongly impregnated with Steel, in three or four different places near each other. The higheſt in a Bed of Moſs deſcending on every ſide from the ſummit or crown of the Bed, and tincturing the paſſages of the Water with a deep and ſtrong Yellow; another ariſes out of a bed of Moſs, lower down the Hill, but being more mixed with the Moſs Water is weaker. The third which is thought much the beſt, ariſes more at the Foot of the Aſcent than the others, from among ſome large Stones, and has lately a Baſon put down of two foot Diameter, and ſix or ſeven Inches deep, a quick Spring, and a ſtrong volatile Chalybeate, as light and pleaſant as thoſe of beſt repute, and takes as ſtrong and quick a Tincture from Green Tea, as* Tunbridge *or* Sittingburn, *but when the Water has ſtood ſome Hours in a Corked Bottle, this Effect is leſs and leſs, till in two or three Days it wholly ceaſes.* There is a very good clear brisk one at *Bedal*, it riſes from under a Houſe Wall, in the lane that goes down to the Bridge, E. of the Town, it ſprings up into a ſquare Baſon; it goes quickly off the Stomach, and is a powerful Diuretic. It is in the Eſtate of Hen: Pierſe :Eſq.

July 15th 1736, the ingenious Mr. *William Leek* of *Carlton* upon *Trent* near *Newark*, diſcovered in the Corner of one of his own Grounds, a very uncommon excellent Chalybeate, riſing up through Cryſtaline Sand, and ſmall pebles; it's ſtrong, yet very light on the Stomach, and a powerful Dieuretic, weighs 30 grs in a pint lighter than common Water, and in my long ſmall Cylindrec Tube falls about 1 20th of an Inch, it's concave on the Surface, then weighs equal with common Water, when firſt mixt with oyl of Tartar, it's a transparent blackiſh, then let's fall a Sedimene of Sulphur and Earth like wool or white Moſs, turns an opac purple with Galls but neither Curddles nor precipitates, nor will it quickly do it with ſpt, C. C. but a ſolution of Alum does it at once, and a large precipitation follows; even when kept many Weeks; it precipitates not Silver out of the ſolution, but a Purple Incruſtation follows. The Water has a very peculiar taſte and ſmell, being exactly that of the Infuſion *Fimi equini*, from it's Sulphur, yet very agreeable to both Palate and Stomach, it often gathers a variegated Scum on it's ſurface. Some Quart Bottles of it Corked a Year ago, ſuch as were well Corked with good Corks, the Water is clear, ſtrikes ſtill Purple with Galls, and ſtrikes the Noſe with it's true original ſmel, and has a ſcum a top like a lamp black, both in colour and lightneſs. The bad cork'd bottles have none of the three, but are Faint and Earthy taſted, of a pale Amber colour, and have a Wooly ragg'd Sediment, and whereever that fœtid part is wanting the Chalybeate is alſo gone; it's found very ſerviceable in Sizy, poor blood, in ſcorbutic, arthritic, vagrant pains, in Stone and Gravel, in irregular or depraved Menſes, &c. and is well adopted for relaxed, or bulky Bodies inhabiting a low, wet country, and with proper care, is capable of carriage.

Newnham Regis, five Miles from *Coventry* and three from *Rugby* in the Eſtate of *Liſter Eſqr.* near his Houſe, the Wells are three in Number, and lye within a few Yards of one another. The uppermoſt is an open large Square Baſon for bathing, the 2d is covered over with two large flat ſtones like tomb ſtones, and in the front a Hole in the middle of an erect Stone gives vent to the Water for drinking, which is clear, fine and ſparkles, leaves the ſtones with a red Dye, but no ſludge or Ochre. It taſtes hard, rough, Steeliſh and pleaſant the Water is diſcharged out of the Baſon upon Sand, whoſe underſide is black with White ſtreaks, and ſmels the ſame as if taken out of a Sulphur Well, both, are 21 grs. lighter than common Water the firſt Well is ſweeter and ſofter than the 2d, both curdle ſoap the 3d Well is ruined and uſeleſs at preſent all are the product of much Limeſtone, ſome Ironſtone, and a very little Nitre, nor can we deny it a little Sulphur, as is evident from the ſand, it has been now uſed at leaſt 170 Years, Dr. *Bailey* chief Phyſician to Queen *Eliz*: wrote and publiſhed a treatiſe upon it in 1582, and a much larger, full of obſervations from an eminent neighbouring Gentleman was promiſed, and expected, but prevented by Death. It's a moſt voulnerary, healing, drying ſweetening Water. *

Coventry great park Chalybeate, riſes up in the bottom of the Park, out of a black gravely ſoil, is 13 grs. in a pint lighter than common Water, ſits pretty eaſy on the Stomach, and goes ſoon off, raiſes the Spirits and creates an Appetite. *Northampton* Spaw, riſes out of the lower part of a gentle Aſcent at the River ſide, about $\frac{1}{8}$ of a Mile on the E. ſide of the Town leaves much Ochre in it's courſe, and turns quickly white and muddy by ſtanding open; is lighter than common Water at the Spring, but becomes heavier after, its very ſtrong of the Steel, and has been ſervicable to ſeveral. *Nottingham* Chalybeate, lies in the Town, juſt by the ſide of a Current of Water, but riſes up below it, about the ſame Weight with common Water, is always muddy hes a rough harſh taſte, being overloaded with Steel, it ſits heavier on the Stomach, and is apt to gripe it, if the nervous coat be exquiſitely ſenſible, or but lightly lined with a mucous coat.

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* A brief Diſcourſe of certain Baths or Medicinal Waters in the County of *Warwick*, near unto a Village called *Newnham Regis*, by *Walter Bailey*: He ſays their Medicinal Vertue was firſt diſcovered by a Husband man, who in lopping of Trees cut his hand grievouſly, he run to theſe Springs to ſtop & waſh off the Blood, and to his great Amaze, the water quickly took off the pain, and ſoon cured the Wound His report preſently brought another who had got a great Wound in his Heel with a Scythe, He was ſoon Cured. Theſe brought a great Reſort of Diſeaſed People hither, from almoſt all parts of the Nation, which excited our Authors curioſity to viſit them himſelf, on Tryal he found them the product of *Alum*, *Nitre*, *Limeſtone* and *Iron*, hence they are of ſovereign uſe in all Diſeaſes of the Eyes, Spleen, *Breaſt*, *Hemorrhages*, *Wounds*, *Ulcers*, Menſes nimii, Fluoralbus, *Aſthma*, *Scurvy*, *Colick*, *Gout*, *Deafneſs*, *Loathing*, *want of Appetite*, *Dyſentry*, *Worms*, *Diabetes*, *Catarrhs*, *Rheums*, *Prolapſus Ani*, Scab, *Itch*, *Tetters*, &c. Tho' *I cannot vouch for It's wonderful Effects in all theſe diſcaſes*, *Yet to my own Knowledge*, *I can for It's ſucceſs in Wounds*, *Ulcers*, *Scab*, *Itch*, *Dyſuri*, *Iſchuria*.

Litchfield Chalybeate, is very clear, briſk, pungent, and gratefull to the Taſte, riſes out of a light Ground, is accomodated with a ſmall houſe for Drinkers, it's 16 grs lighter than common Water, ſits verily eaſily on the Stomach, goes quickly off, works powerfully by urine, but ſoon grows White, muddy, and harſh taſted by ſtanding. There is alſo a Coarſe one in Sena Park near *Burton.*

Ilmington or *Balemore* Spaw withing the edge of *Warwickſhire*, bordering on *Worceſterſhire*; it's very clear and fine, riſes out of a ſtrong clay and ſome Gretſtone, leaves much Ochre in it's courſe, is drunk from one to four Quarts. It was firſt tried and recommended by Dr. *Cole*, and after he went to *London*, it was examined, and a Treatiſe wrote on it by *Sam*: *Derham*: B: M: in 1685. *He derives it's virtues from an eſurine Salt, preying upon a Minera of Iron, which operating upon and combining become a vitriol of Steel or Iron. Therefore ommitting the Modes and kinds of Fermentations on human bodies; he only inquires what are the fermental Digeſtions of our Bodies, and the Depravations of them, 2 The Diſtempers hence a riſing. 3 whether the* Ilmington *Spaw will contribute to the cure of and Reſtoration from thoſe Diſorders, and according to his way of Reaſoning (wherein he is ſingularly obliged to Dr.* Willis *on Fermentation, and Sympſons Hydrological Eſſays) It's good in the* Scurvy, Dropſy, Jaundice, Stone *and* Gravel, Obſtructed Menſes, *and to* putrify the Blood.

Birmingham Spaw, riſes up a Mile E: of the Town, on the W. ſide of the Highway in *Saltley lane*, it's a pleaſant, ſpirituous, light Chalybeate, goes off ſoon, is a good Dieuretic, Stomachic and Deobſtruent, Springs out of a Sandy Gravel, is often recommended by the Ingenious and Worthy Dr. *Turton* there, it's fixt parts are wholly Inconſiderable therefore it's virtue conſiſts only in it's Volatile, it is lighter than common Water, leaves Ochre, and when it ſtagnates, a ſcum.

Cannock or *Cank* near *Stafford*, it's of the greateſt Note of any Spaw in that County, and has the greateſt reſort to it, not only from the Water, but it's fine Air, and Convenience for Diverſions, being much the beſt in *Staffordſhire*. The Water riſes from Coal, and Iron ſtone, on the W: ſide of a fine Deſcent S: of the Town, It's a pure, Cryſtaline, light Chalybeate but in 2 or 3 Days let's fall it's Ochre, whereof it has ſuch plenty, that tho' it has a Stone Baſon, which contains many Gallons of Water, and clears it's ſelf by a Guttur cut in the ſide of the Receiver, yet in Summer if it was not cleanced out every day, it would in a few days be quite full of Sludge and Ochre. The Surface of the Soil is very Sandy. *Dudley* Spaw is in *Hawkes-Cloſe* near the Town, it's an indifferent clear Water, too rich of the Steel, therefore apt to ly longer on the Stomach, of a rougher, harſher Taſte, ſoon loſes it's Tranſparency, weighs near the ſame with common Water. but there is a tolerable good one at *Shiphnal* in *Shropſhire*; two Miles and a half from this at *Stannyford* is one which was formerly of great Renown, where many Lame People were cured, and left their Cruches.

At *Dinnington* in *Lilyſhal* pariſh, between *Newport* and *Wellington*, within the Foot of the Cloſe E: of *Redbrook lane*, comes out what's called an old Coal Sough, a Spring of charming, brisk, light Chalybeate Water, very different from that which comes out of the Hedge ſide on the right hand of the Road to *Rockwardin*, which tho' much uſed, is truely Coal Sough Water. of a naſty rough, harſh, ſtrong, diſagreeable Vitriolic Taſte, loaded with Coal Ochre, the firſt, tho' neglected, is the beſt I met with in Shropſhire next to *Benthall* near *Wenlock* and *Wellington*, the ancient and lovely ſeat of the family of the *Benthals*. This is the firſt Spaw in the County, tho' a meer Chalybeate, it's 36 grs. in a Pint lighter than common Water; it comes from Coal with a lay of Iron Stone. The preſent well is in the Pariſh Clark's Cellar, at a Small Diſtance is a Mountain of Limeſtone Rock. The Water is exceeding Light, ſits very eaſy on the Stomach, and goes ſpeedily off by Urine; exhilerates much, and excites a good Appetite; but to reap all thoſe noble Advantages, it muſt be drunk at the Spring. This has been uſed with great Benefit of late Years, ſince the other was loſt in the Coal works there.

Moretonſee near Market *Drayton* juſt by the Purging pump Water, is a ſmall Chalybeate, Which being put and kept in order, would not only be a very good one of this Claſs, but might paſs for a tolerable Laxative and yet it's lighter than common Water by ſix grs. Strikes pink with Galls at the Spring, but not when carried two Miles, perhaps becauſe of the Exceſſive Rain that day.

In *Buglawton* in *Aſtbury* Pariſh, near *Congleton*, *Cheſhire*, in Mr. *Rams* wood, in the cleugh, at the bottom of a ſteep bank, of gret. Stone and Sand, riſes a very clear, light, brisk, pleaſant Chalybeate.

Binley lies about half a Mile from the Village of that Name, and two Miles from *Coventry*, near the River ſide into which it empties it's Self. The Soil is a Mixture of Sand, Gravel and Clay; two Miles above the Spaw, a great Quantity of Coals are got. It's 28 grs. in a pint lighter than common Water, is a fine brisk clear, powerfull Dieuretick chalybeate, Ordinary people drink it from two to four Quarts, ſo find it laxative, cooling, bracing and exhilerating. The Baſon on the outſide gives vent to a blackiſh fœtid Water. It's a very plentiful Spring in a Graſs cloſe, and it is deſervedly the favourite of the ingenious Mr. *John Smith Surgeon of Coventry*, who has been at Expences of putting down a neat Baſon, covering It over, ſetting down ſeats for the Drinkers, making a way to it and all Conveniences. It is without peradventure, preferrable to any of the known Chalybeatcs in that Neighbourhood, for clearneſs, purity, lightneſs and Simplicity, but from the volatility of it's principles, will not bear carrying or ſtanding.

The next eminent Water of this kind is *Aſtrope*, near *King's Sutton* three Miles from *Banbury*, ſixteen from *Northampton*. It has now maintained it's Character for ſeventy Years, with admirable Succeſs, for which the world is more obliged to the learned and Ingenious Dr. *Wills*, Dr. *Lower* who firſt recommended it, after whom Dr. *Derham*, Dr. *Plot* and *Dale* mention it, and the worthy Mr. *Morton* carefully examined it, I ſay the World is more indebted to theſe benevolent human Gentlemen, than to a late peviſh Humorriſt of a Phyſician who upon ſome Diſcontent, ſaid *he would put a Toad in that Well*, if he did, he either took it out again, and eat it up, or the Water has converted it into one of the moſt reſtorative Medicines in the Country. ſuch as profeſs themſelves the Guardians of humane Life and Health, ſhould hate ſuch inhumanity which may prevent the Recovery and Occaſion the Death of Many, to which they may perhaps one day be found Acceſſory, and can now make no equivalant compenſation. The Well riſes up in *Sir Simon Stewart's Eſtate*, at the bottom of a ſmall Diſcent. is the product of

Lime ſtone, Iron ſtone, and Sandy Clay, in which at a ſmall depth a little above the Spring, may be found calcarious and ferruginous petrefactions, full of Shells, and in the Clay below, the Selenites. The Water is a noble, briſk, very ſpiritous, clear, pleaſant taſted Chalybeate, conſiderably lighter than common Water, Springs up into a Cloſe ſtrong Baſon, full of Holes at bottom, and empties it's ſelf by a long neat Gutter, cut out of Freeſtone, both which it lines with a ragg'd ſmall furr, of a light pale coloured Ochre, and all along it's courſe leaves a ſtrong variegated Scum, which gathered and dried in a very gentle Heat, then laid on a red hot plate of Iron, in a dark Room, Smoaks, and emits a blew Small flame, with a ſmell of Sulphur, and leaves a little browniſh ferruginous Earth. The Spring Diſcharges between 3 and 400 Gallons of Water in an Hour. With Galls there, it's of a deep Purple, but carried 4 of a Mile to the houſe, it's only a pink, and is of equal weight, or rather heavier than common Water. So very ſubtle and volatile is it's Chalybeate Spirit, any ſolid ponderous Body laid a few days in the Baſon, contracts an indelible black Colour, the ſame Tincture it gives the Fæces of it's Drinkers, and ſometimes to their Mouth and Teeth. On the ſame ſide of the brook with the Well, is a houſe with palliſadoes before it, from this the Company go under a Shelter into another very large Saſhed, wainſcoted, boarded floor Room, where they walk, drink Coffee or Tea, and in the afternoon meet, converſe, or entertain themſelves with ſome Diverſions, out off, and behind this, is a noble, dry fine Gravel Walk, 140 Yards long, 6 broad, with a charming cloſe ſet clipp'd Hedge 12 foot high, with ſeveral neat Benches on each ſide; at the far end of it is a ſtately large Garden houſe, where at right Angles from this, turns off another Shaded walk 45 Yards long, at the far end of which, are conveniences for the drinkers to retire when their Waters operate, On the other ſide of the brook from the Well, is a fine Tea Room, dancing Room, and a large Kitchin &c. And near this a convenient Shop. In the Town there is a large Ball or Aſſembly Room. Thus Nature and Art have combined to make it a paradiſe of pleaſure, and the Elements have added a Signal Salubrity to the place, all which joyned to the Efficacy of the Water, perform moſt ſurprizing and ſeemingly incredible cures. Take one or two for a ſpecimen of the many hundreds that might be produced, and alſo out of the common diſeaſes that ſuch Waters are generally uſed for. Mr. *Philip Bird* near *Stoney Stratford* aged 25 Years, was ſiezed with a ſevere hectic Fever, tearing Cough, excruciating pain of the ſide, profuſe colliquative Night Sweats, great Trembling, Emaciation, ſudden and often change of Colour in his Face, one time a high red, with glowing heat and cherry Cheeks, then as pale, with a ſmall vermillion on the tip of one or both Cheeks, intenſe heat, a high Fever, which had it's Exacerbations, eſpecially after any, even the lighteſt Food, He had the beſt Phyſicians in the Country, but they could give no Relief, then he was with great Toil Tenderneſs and Danger, conveyed hither, where he continued eight Weeks, drunk dayly four Quarts of Water, went home perfectly cured, and continued ſo ever ſince. This Relation I had from his own Wife, and atteſted by the Revd. Mr. *Herbert* of the Pariſh. Mr. *Joſiah Diſton* aged 66 Years came here in the beginning of *Aug*, 1732. He laboured under a total loſs of Appetite, attended with continual Reachings, and vomitings, a Jandice, Aſthma, Dropſy, his Belly, Legs and Thighs ſwelled ſo as he could not Walk, nor ſo much as turn himſelf in bed, without Aſſiſtance, but by drinking three Quarts of this Water dayly, in a fortnight he walked from the far end of Sutton to Aſtrope. In a Week more he eaſily retained and readily digeſted all ſorts of white Meats. Then he began to drink and entertain large Companies every day, ſat up at a Ball and drunk hard all Night At the Month end he recovered the Natural healthy colour of his Face; ſwellings of Legs and Thighs abated, the pittings of the firſt was quite gone, he dayly recovered, continued drinking the Waters for Eight Weeks, but during the laſt four he indulged himſelf a more liberal uſe of Spirituous Liquors, than at firſt; he went home in perfect Health, and remained ſo the next two Summer Seaſons, when he came to Aſtrope. This I have atteſted to me under the Hand of that ingenious and benevolent Gentleman Mr. *Math. Herbert* of *Sutton.* As to the Succeſs of this Water in Stone Gravel, Hyppo, and female Diſorders, I have neither room, nor time to enumerate them. one *Adam Billinger* of *Wood ſtock*, came here in a miſerable Condition with the Gravel, and drunk it two or three Days only before he parted with 11 Sones in one Night; upon further inquiry into the Succeſs of this Water from ſuch as have known it for 60 Years, And attended it dayly every Seaſon for the laſt 30 Years. I found it a certain cure in all female Obſtructions; and ſingularly good in the firſt, and begining of the ſecond ſtage of conſumptions; ſeldom fail in the Jandice, or begining Dropſies, effectually reſtore a Conſtitution Shattered by hard Drinking, they are Sovereign in Rheumatic pains Stone and Gravel; and have reſtored ſeveral that have been melancholly or maniac from Hyppo or Hyſteric. But ſuch as reap this ſurprizing Benefit from this Water never drink leſs than from three to five Quarts in a forenoon, a ſure ſign that the modiſh quantity of a pint and a half, or a Quart is wrong, and as ſeldom anſwers with ſuch general great Succeſs. *Oxford* new Well N. E. of the Holywell Church, it's about a Dozen Yards from the River; riſes up in a gravely Soil, by a Pump about ſix foot deep. It's a weak chalybeate Water.

Wellingburrow Spaw, or *Redwell*, has a place here only from Dr. *Merrets* reckoning it among the purging Waters of England. It lies half a Mile N: of the Town, in an open field, almoſt at the foot of a Hill; it's a very clear Water, depoſites ſome Ochre. It's ſo plentifull a Spring, that it throws ſorth Water for a large Brook. On the Hill above is Limeſtone, a ſort of Iron ſtone and ſtrong Clay. Who firſt obſerved this Spring to be medicinal we know not, and tho' it be Inferior to ſeveral in vertue, yet it has been before them in Uſe and Fame, for *Morton* ſays that *Drayton* will have the Town take it's Name from it. And that Sir *Theodore Mayerne* recommends it in his Writings. *Derby* Spaw was diſcovered about 1733 by the late Dr. *Chauncy* Phyſician there. He put down a Baſon into the Spring, about a Yard Square every way, and a Pump in the middle of it, to draw off eaſily the old Water to come at the freſh, he built a cover over the Spring, which diſcharges it's ſelf by a Grate, and keeps the place always dry. About twenty Yards below the Spaw he made a handſome cold bath, and ſome Rooms to it, he was at conſiderable Expences here, and died about two Years after the Diſcovery of it. It lies of Derby riſes out of a level, low Sandy Soil.

The laſt Five are ſaid to be purgative, tho' in reality, ſimply conſidered, they cannot with Juſtice be reckoned of that claſs, not carrying in them a ſufficient quantity of fixt Salts to anſwer that end; therefore muſt they either be ſwallowed in immoderate Doſes, that they may act by their Bulk and preſſure, or have ſome of the Shop purging Salts diſſolved in the firſt Glaſs every Morning. The Chalybeates whoſe Hiſtory were ſent me by the Rev'd Mr *Herbert* as mentioned in the preface, are.

Puckwell *by Mr.* Cartwrights *Park of* Aynho, *has a ferruginous Taſte and Smell, and has been known Time out of Mind; not having due care taken of it, the freſh gets in and mixes with it either in Winter or after much Rain, whereby it's for ſome time ſo diluted that it ſcarce gives a Pink colour with Galls; otherwiſe it's a good Chalybeate. See* Morton's *Hiſtory.*

Barrowlaies *Well, near to Mr.* Stokes *Garden at the three Tunns Banbury, has a ferruginous Taſte, but not being neatly kept. ſmells of Mud, it was diſcovered abont* 18 *Years ago.*

Bloxham *new Well, lies about a Furlong from the Town, on it's* W: *ſide, almoſt cloſe to the Brook; it taſtes at firſt perfectly ferruginous; and leaves ſoon a little Roughneſs all over the Mouth, which laſts for ſome time; ſmells as if Sated with ferruginous Effluvia; It was diſcovered about* 25 *Years ago, has been remarkable for curing the Mange, both in Dogs and Horſes, and would do the ſame in Eruptions of the Skin in humane Bodies; it has given great relief in the Stone, and has reſtored the Vigor of Relaxed Stomachs when not only Phyſicians, but the Bath Waters have failed. It has cured Coſtiveneſs and habitual Gripes when the propereſt Medicines were not able to reach it; has procured the Menſes, when other Emmenagogues with Gumm pills & Benedictæ, have been unſucceſsful; has removed moſt Stuborn and Chronic Headachs, and Rheumatic pains, whoſe Violence had long confined the Sick to Bed, it's drunk in pretty large Quantities to anſwer theſe Purpoſes; Works chiefly by urine, and keeps the Body open. Dr.* Adams *of* Daventry, *ſome Years ago made ſome Experiments on it, the Event is not known but very likely not tallying with his Expectations, the above Succeſses, could not prevent it's falling into Diſuſe.*

Nether or Lower Worton *Well in* Oxfordſhire, *taſtes Vitriolic, leaves a durable Roughneſs on the Mouth and Tongue, it's a quick* *and clear Spring of light Chalybeate Water, has been long known; the eminent Dr.* Cummins *who has long lived in the Neighbourhood, has the beſt Opportunity to be acquainted with it's Virtues.*

Blackmore *Spaw, at the* E: *end of* Hooknorton, (*in Mr.* Bail's *Meadow*) *three Miles from* Chippingnorton: Hooknorton *at the* W: *end of the Town, called* Scotland end, *in* Dame Carters *Orchard, both have a ferruginous Taſte and ſmell; the firſt has a quicker Taſte of Iron, and leaves in three or four Minutes a light Roughneſs; which is not ſo eaſily nor ſenſibly felt in* Dame Carters, *which has at firſt a muddy Taſte, and has been known for many Years, the other not above three or four, nor has Time or Fame been ſo kind as to tranſmitt any remarkable Cures done by either, tho' they cannot be ſuppoſed deſtitute of* Sanative *Principles more than other Chalybeates.*

Wroxton *in Lord* North and Guilfords *Garden* Oxon: *It's Smels a little of* Sulphur, *hes been more noted for diluting Spirituous Liquors, and taking off their immediate Effects, than Curing Diſſeaſes.*

Coſgrave *alias* Gooſgrave *is two Miles* N: E: *from* Stony Stratford *a weak Chalybeate Spring, but a clear fine Water taſtes faintly of the Chalybeate, ſoft, and Milky, ſmells not of any Diſtinguiſhing Impregnation, frequently made uſe of as a Repellent for Inflamations of the Eyes both in Man and Beaſt. The tincturing Ingredients, gave me but little more Knowledge of it's proper Qualities, for* Campeachy *was at firſt only a Fleſh, & in one night ſtanding a light Wine.*

Calverton *lays* S: *of* Stratford *two Miles. Is a very ſtrong Chalybeate but a ſlow Spring, as it is almoſt Choaked up by a little Trench that was formerly cut to carry of it's Refluent Waters, It's Diſcharge is now ſcarce viſible taſtes very ferrugenous or rather Copporiſh, and leaves a Muddiſh Flavour behind it. Smells Inky and has a ſtrong Ochre floating on it's top.*

Theſe are a Specimen of this Claſs, ſo numerous in all the Counties of England, that a bare Catalogue of them might ſuffice for a volume. The Curious may find the Names of ſeveral more in Mr. *Mortons Hiſtory* of *Northamptonſhire*, Dr. *Plots Hiſtory* of *Oxfordſhire.* and

Staffordſhire, Dr. *Lieghs Hiſtory of Cheſhire and Lancaſhire*, *Robinſon's Hiſtory of Cumberland, and Weſtmoreland*, and in the *Magna Britania.* Now for a few Obſervations from the whole.

Firſt, this claſs of Waters is produced by all Soils, Sandy, Gravelie, Clayie, Rocky, Moſſy, Marley, *&c.* And Spring up in all Situations, ſummits, ſides, foots of Mountains or Hills, and in Valeys dry Grounds, or marſhes, and face all the Points of the Compaſs. But mountainous Countries afford moſt of them, as tho' their Caverns, were the only Matrix of Metals, ſemi Mettals, Salts, and Sulphurs, 2 That they are produced (as chalybeates) only of Iron ſtone, Coal, Shale, or a Mixture of two, or more of thoſe. 3 That we perceive a very great Difference in their ſmell, and taſte: Some being much more agreeable than others, ſome more pleaſant, others rough and Harſh, 4 That there is a great Difference in their Weight at the Spring even ſuppoſing their ſcantling of fixed parts to be equal, tho they are all pretty near the ſame with common Water, after they have been taken up ſome time. 5 That as they weigh lighter and taſte pleaſanter, they drink the more brisk, pungent and Spirituous, are more ſparkling *&c.* 6 The lighter, and finer taſted they are, and the more exhilerating, the lighter they ſit on the Stomach, and the ſooner they go off, and out of the Body by urine. 7 That the Effects of them all are pretty much the ſame, viz Diuretic, but differ in their degrees, ſome ſlower, others quicker. 8. That it's the Nature of thoſe Waters in general to undergo ſome change in their parts, by keeping, ſtanding, or carriage, eſpecially in Oak Veſſels, turning white, muddy, depoſiting a ſediment, throwing up a ſcum, or otherwiſe ſeparating ſome of their parts. 9 That there is a very great difference with regard to the Recrements they let fall in their courſe, and that both as to quantity, colour, and ponderoſity, ſome little more than tinging their Baſon, others leaving and raiſing little Hills of Sludge or Ochre, ſome whereof is a light Yellow, light brown, or a browniſh red, ſome very light, ſome heavy; the darker coloured, the heavier, the ſmaller tinged, the lighter. 10. Of all others Coal and Shale, depoſite the moſt Ochre, Ironſtone the leaſt, and, the nearer the Day, the impregnating Minerals lye, the more Ochre they have, probably ſome Air having Acceſs to, and the vitriol helping forward a Corroſion of the parts. 11. The ſtronger the Cement of the Sulphur, the greater the *Nixus* of the Principles, and the purer the Water; therefore perfect Metals give leſs Recrements than imperfect, Iron leſs than Coal, Kennel Coal leſs than others. 12 Of all ſoils, Steel Waters ſtrained through ſtiff Clay, are *Cæteris Paribus*, the cleareſt, and bring leaſt Earth with them. 13 As the Coarſer Chalybeates leave the moſt Ochre, ſo it's moſtly of a light yellow, or brown, is leaneſt of Iron or rubric and vitriol, and the deep reddiſh brown contain moſt, hence they are heavyeſt. 14 Moſt of them, if their Baſon and Courſe are not often clean'd out, are covered with a variegated Scum of ſeveral Colours, but chiefly red, brown, yellow, orange, blew; which ſcum is incommiſcible either with it's own, or other Waters, but breaks and ſwims in them, like ſmall Flakes or Films; or if gathered and dried, afford only a little Earth of the ſame nature, with the fineſt ſort of that in the Sediment, only before it was dried, it had a Mixture of Sulphur entangled with it, which by the heat of the Fire, or Sun, is exhaled, this Scum is thicker, or thinner, as there is more, or leſs, of the Sulphurous or Chalybeate Principles in the Water. 15 None of thoſe Waters impregnated with Vitriol enrich the good, or improve the baren land, a ſign that Salt is no great Friend to vegetation, or Fertilization. 16 All Chalybeates agree in this, that tho' they mix or boyl with Milk, yet they Curdle Soap, till they have ſtood two or three Days. 17 The more light, and pleaſant to the Taſte, and gratefull to the Stomach, any Chalybeate is, the more it encreaſes Urine and Appetite, and the more powerful opener it is of Obſtructions in the ſmall Veſſels, and the greater purifyer of the Blood, and Remover of it's Lentor and Sizyneſs.

THE

Of Laxative and Purging Chalybeats.

THESE are *Thoroton Kingscliff*, *Tarleton*, *Cartmall*, *Weatherſlack*, *Stanger*, *Kirkby Thewer*, or *Thore* and *Hartlepool.*

Thoroton Spaw, a few Miles from *Southwell* and *Newark*, lies about two Lands length from *Thoroton* in a low Ground, near a ſmall River ſide, by which it's often overflooded; it has but little Deſcent to clear it's ſelf by, but might be altered to Advantage, and is highly worthy of ſecuring, as will after appear. It was diſcovered in 1733. It's the product of the ſame Vein of Minerals with *Orſton*, but lying lower, it's more richly impregnated with the Mineral Juyces, as appears from incontravertible Experiments. It's now Intirely loſt.

Kingscliff Spaw, lies a Mile S: of the Town, near the Right Honourable *The Earl of Weſtmorelands*, in his Eſtate, five Miles from *Stamford*, and as far from *Oundle* it Springs up in a Clayie Soil at the Foot of a Hill, by a pleaſant Woodſide in a lovely Situation. It's a beautiful clear Water as it riſes up, of an Irony Smel and Taſte, has a round Stone Baſon for it's Receiver, which it dies red, and leaves much Ochre in it's courſe, it is drunk to 3 4 or 5 Quarts to purge ſtrong People. It's uſe has been attended with admirable Succeſs, in Diſorders from Obſtructions, Erruptions on the Skin, and has cured ſeveral Lame People. It was diſcovered by the Revd. Mr. *John Boughton* fellow of St. *John's Cambridge* in 1670, was approved, and recommended in moſt of the above Diſeaſes, by the late ingenious Dr. *Brown* of *Cliff*. It was ſoon provided with all neceſſary Conveniences and Accomodations, and made one of the moſt beautifull and convenient places of that ſort in England, much, and deſervedly celebrated, and frequented, and it's certain neither that County nor *Warwickſhire* have any of this claſs comparable to it, tho' it be neglected at preſent; a little below the Spring is a very good *Bath.*

Tarleton, lies in the Hundred of *Willibrook Lancaſhire*, eight Miles W: of *Preſton*, in the Chapelry under *Croſton*; Mrs. *Leadbeater* is proprietreſs of it: Who wanting houſe Water, ſunk a Pump at great Expences, and with much trouble and difficulty, from the dayly Shooting in of the ſundry lays of Earth, even to a great Diſtance, and large Chaſms. The Diggers went through firſt Corn mould, then a beautiful Mixture of Marle and white Sand, then much Ironſtone and Rubric, laſtly they came to a clear, pure, hard pleaſant Water; in a pleaſant, low, fruitfull, country, and is not affected by Rain, Drought, or other changes of Weather. It's nothing ſo ſtrong of the Chalybeate as the laſt two, but has a faint ſmell of Sulphur, when juſt drawn. It curdles both Soap and Milk, when the Steel is gone off it taſtes ſweetiſh. In 1715, when it was juſt made, ſome Soldiers, coming from *Preſton* who were very thirſty, drunk of it freely to 3 or 4 Pints a piece, and all were very ſmartly purged, upon this accidental diſcovery it was very much frequented for a few Seaſons, but by Repeated inſtances of ſome imaginary or real abuſe of the Strangers, it came to be neglected; it is at preſent very little uſed; and is likely to continue ſo, till the Landlady be diſpoſed to ſhew a little more Civility to the Gueſts, and better Treatment ſlowly invite them back. The Chaple above is ſaid to ſtand where formerly was a Popiſh Abbey, tho' I could not diſcover the leaſt Remains of any ſuch Ruines. In the Eaſt corner of the Chapel Yard or buryingplace, is St. *Helens Well* which is ſaid to have done miraculous cures on *Maimed*, *Lame*, *Deaf*, and *Blind*, and diſeaſed People, only by bathing and waſhing, from this ſome ignorant, or ill diſpoſed People will have *Tarleton* Spaw to derive it's original. But from a thorow Examination of both upon the Spot, I muſt with juſtice clear both Mrs. *Leadbeater*, and her Spaw, from this charge of ſacriledge, for St. *Helens Well* is only a good cold Bath of common Water. The other an excellent medicinal Spring.

Cartmall Spaws have very little title to this claſs, the Steel being ſo inconſiderable, as is hardly to be deſerned, except it be artfully managed. They are at a place called *Rougham*, 2 or 3 Miles from *Cartmall*, and Spring from under a Limeſtone Mountain, 12 Yards Perpendicular, which is of the Marble kind, and affords abundance of brown, and Spotted Marble for the Country. The Rocks are Cloathed with Samphire and other Sea plants, on the top is a large arched *Grotto* with an entry into it, and a long Subterranean Paſſage. Beſides the old Spring are many others on the ſame Sands under that Ridge, ſome Saline, others freſh, ſoft and Sweet, all fine, pure, clear brisk Water; but all Spring up under the W: ſide of the Mountain facing the ſetting Sun. So that the place is deprived of it's comfortable Rays till 9 or 10 a Clock; it's a Melancholy Scene for Water Drinkers, on Cold wet Sands, only they ſeldom appear till after 9 o'Clock, when Drinkers in other places have finiſhed their Doſe. Common People ſwallow from 3 to 8 Quarts for a thorow Bruſh upwards and downwards. On the E: ſide of this Mountain, facing the riſing Sun, is another Well lately found, and ſaid to be the ancient Spaw, which, upon Tryal, I found no more than Sea Water ſtrained through the Sand. The Chalybeate principle impregnating the Springs on the W: ſide as I ſaid before, is very ſmall, tho it come off ſome *Ironſtone*, as well as *Limeſtone.* However from it's other Principles, which will bear carriage to any Diſtance, it's capable of great, and good Effects, in habitual coſtiveneſs, Stone, Gravel, Worms, Cachexy Chloroſis &c, as we ſhall preſently ſee from it's Principles, but we haſten on to another, *viz.*

Weatherſlack Spaw, within the edge of *Weſtmoorland*, in the Right Honourable the *Earl of Derby's* Eſtate, eight Miles from *Kendal*, riſes up at the foot of a Rock of *Limeſtone*, and *Ironſtone*, about 12 foot high, beyond which above a pretty large Aſcent, is a naked Mountain of Limeſtone above 100 Yards perpendicular. The Spring riſes facing the W: and empties it's ſelf into a black peat Moſs ground. It's exceeding clear and brackiſh Salt. In Summer it ſmels a little of Sulphur, and is covered with a Whitiſh ſcum, but in Winter it's current is ſtronger, without this ſmel or ſcum, from the Adition of freſh Water, before it was ſecured by a proper Reſervoir. On the top of the ſmall Rock above the Spaw, might very eaſily be made moſt charming Walks, commanding the moſt ample and diverſified proſpect of Sea and Land, Rocks, Hills, and the moſt fruitful Plains. Sure *England* has ſcarce another ſuch Romantic place, exceeding dry, and warm, facing the hot Sun, and Well fenced from the Cold Blaſts from N: N E: and E: The Ground about is all charmingly beautified with Shrubs and Plants, with the largeſt and fruitfulleſt Field of Junipers I ever found; the ripe good berries whereof might have been ſold Yearly, at 100 lb. Under this upper Bed of Limeſtone, is a very rich thick *Stratum* of *Ironſtone.* W: and S: of the Spaw is a very Spacious Moraſs or peat Moſs, dry and Level. On the top of the firſt Hill is a moſt ſweet, deſireable, dry, Stony ſoil, abounding with good, and early Fruits of ſeveral Kinds. The romantickneſs of the place, the extraordinary healthyneſs of the Air, the fine variety of Proſpects, combine to entertain the Fancy with pleaſant Ideas, exhilerate the Spirits, raiſe the ſluggiſh Circulation, brace the languid Nerves, and reſtore Health without Phyſick, or Waters, and what may we not expect where we have the laſt added in Perfection the Spring was diſcovered about 1660, by Children gathering *Strawberries* in a very hot Day, who being thirſty, ſtopt and drunk of it, but either their Conſtitutions were too delicate, or their Doſe too liberal, it purged them ſeverely, ſoon after a ſuperannuated Soldier having ſeveral old foul and dangerous ulcerated Wounds, came and both drunk and waſhed with this Water, he ſoon got a welcome Cure. It's remarkably Servicable againſt *Stone*, *Gravel*, *Worms*, *Innappotency*, *Cachexy*, *Corpulency*, *Jandice*, *Dropſy*, &c. The Spaw is about half a Mile from the Church. The Water being carried ſo ſmall a way, gains in Weight 15 grs. in a Pint.

At *Stanger*, three Miles W: of *Keſwick* and two Miles S: of *Cockermouth* and ¼ of a Mile from the Village, riſes up in a low dry Sandy Ground, the Spaw, which has a ſhelter built over it, it throws forth plenty of briniſh vitriolic clear Water, of an Irony Taſte and Smel, which Inſtantly curdles both Soap and Milk. When drunk to 4 or 5 Pints it Purges with Violence upwards and downwards, and is found a ſovereign Remedy in *Surfiets*, old or new, Diſorders or old pains of the *Stomach*, *Green ſickneſs*, *Scurvy*, *Sores*, out *breakings* of the Skin; *Pains of the Breaſt* &c.

Kirkby Thower or *Thore*, three Miles from *Appleby* in *Weſtmoreland*, and 7 from *Penreth*, affords the beſt Spaw in that County or near it, which, by a judicious and regular uſe, may become as famous for it's Cures, as the Village is for it's Antiquity; having once a great Town and noble Caſtle near it, and being immediately under the Tutelage of the *God Thor*, who had an eminent temple here, and whoſe Name the place ſtill bears. The Spaw riſes up *in a Cloſe* by the Brookſide, in *Pots field* N: E: the Town, a Field of above 20 Acres of Ground, overgrown with Whins and Ruſhes, has not lately been Plowed or manured, the ſoil Sandy and full of ſmall Pebbles, in the Eſtate of ---------- *Wharton* of *Gillen* Eſqr: The upper Well Water riſes up boyling and bubbling, brings up great bubbles of Air, caſts forth a great quantity of VVater, leaves no *Ochre* nor *Sludge* in it's Courſe, nor Scum; but it's bottom is Ink black, and Courſe brown: it has neither Baſon, nor Receiver, only a pretty large Hole near the Brookſide; the VVater is exceeding clear, fine, ſweetiſh, and a little Chalybeate taſted. A few Yards below this on the ſame ſide of the Brook, by a late cold Bath is another Spring of the ſame Nature but much ſtronger of the Steel, it's courſe is Ochry, has no Baſon nor other Convenience, they lye in as fine a Country as one could wiſh for fine Air, and all ſorts of Recreations and plenty of goood Proviſions, at very low Rates, the laſt has a weaker ſtream, is oft covered with a variegated Scum; both Purge ruſticks well, if drunk to 3 or 4 Quarts; a leſs Quantity requires ſome Salts to promote Evacuation.

Hartlepool is a Market, and Seaport, in the Biſhoprick of *Durham* but has at preſent no great Matters to boaſt off, beſides it's Antiquity, fine Air, lovely ſituation, and the far beſt Mineral Water in the County. No veſtigies of the Ruins of it's once magnificicent *Monaſtery* nor it's ancient flouriſhing *Free School*, *Stockton*, *Yarm*, *Durham*, and *Sunderland*, have got it's Trade; and the Fiſhery, which made a Conſiderable Branch of it, is very much decayed on all the Eaſtcoaſt. It was a very ſpacious Maritime Town, as ſtill appears from it's vaſt Ruines, ſome hundreds of Years before St. *Cuthberts* Church of wreathen wans and Hurdles, was erected at *Durham*, by a Company of Strowling Monks and People, who inſtead of defending their Country and property againſt the Danes, deſerted it to theſe Lordly incomers A: D: 1000 who quickly entered to the poſſeſſion of all the other had, except the noble patrimony and rich inheritance of a dead Prieſts Bones, theſe they brought away, and depoſited in the above Church, which was the firſt Fabrick of that late and now lordly City. As to the Air of *Hartlepole*, none in theſe parts can exceed it for Salubrity, being ſituated in the very point of a *Peninſula*, where the temperate Breezes from the Sea, check it's Winter colds, and ſoon diſſolve it's Ice and Snow, and temper it's ſultry Summer Heat. It's free from great Woods, Marſhes, Flats, Levels, and ſtanding Water; nor is it environed with Rocks, Mountains, or precipices. The Situation is truely fine and charming. The town ſtands chiefly on Limeſtone and ſeveral ſorts of Freeſtone, S: and S E: of a long range of ſmall green hills, cloathed with pleaſant green paſtures, abounding with variety of curious plants. On the W: and S W: ſide of this beautiful Ridge, between that and the Country, is a large, delicate, dry, green, ſmooth Lawn, fit for all ſorts of Exerciſes and Recreations On the W: ſide of the Town is a large Area of Sands, and a great variety of proſpect. The place affords all neceſſary Conveniences, but happily exempt from the Baits of Intemperance, Luxury, and Debauchery. Tho' the Mineral Water of this Place has been known to the Town and Neighbourhood beyond all Memory and Tradition, yet it's Reputation has not reached to any great Diſtance, becauſe it's principles and uſes have not been throughly known before. It riſes upon the S: ſide of the Town, a few Yards without Sand-gate, within the Sea mark, ſo that till laſt Summer, it was overflooded each Tide, for ſome hours. The Water is exceeding fine, clear, thin, of a pleaſant ſmall Chalybeate Taſte ſmels a little of Sulphur, is grateful to, and ſits light on the Stomach, and paſſes quickly off, it tinged it's old Baſon blackiſh, from it's ſcantling of Sulphur. The Spring diſcharges plenty of Water. The ſtrata of Earth through which it riſes, having never been digg'd to any great depth, it cannot with certainty be determined what they are, further than 1 a pretty thick bed of ſtrong Clay, under that a White Freeſtone, and beyond that Limeſtone. The Spring riſes either perpendicular, or is ſtrained through the crannies of the Rocks by a ſlooping Deſcent, for a Tube being cloſe fixt upon it, the Water riſes up to a conſiderable height. It's Irony taſte is far from being rough, harſh or eager, but quite pleaſant to the palate, Tho' it ſmels ſenſibly of Sulphur, when freſh taken up, yet it's far from being nauſeous or loathſome, but is loſt in the Taſte. As the Water riſes up it weighs lighter than common Water, but on a little ſtanding it loſes it loſes both it's Sulphur and Chalybeate Taſtes, and has gained in weight, but yet it's neither vapid, milky, Muddy, nor depoſits an Ochrous ſediment, nor throws up a thick Scum. In Summer 1738. The Corporation obſerving that the Sea mixt with the Spaw, took up the old Stone Baſon, put down a ſquare hollow piece of Lead, 14 Inches over and ſeveral deep, on the top of it, placed a Lead Pipe ſix foot long, and above two Inches Diameter at the top, and as wide at the bottom, as the place where the Water boyls up impetuouſly; from the bottom of the ſquare, to near the bottom of the Pipe, was ramm'd in ſtrong well wrought Clay within a ſquare Wall of great Stones claſp'd with Iron, then ſeveral ſtrong thick pieces of Wood were driven through the Clay into the Earth, the top covered with ſtrong broad Stones claſped with Iron. Into the top of the great Pipe is fixt a ſmall Branch, by which the Water empties it's ſelf into a Baſon, containing about three Gallons, or may be received into a Glaſs, Cup, or Bottle as it comes out of the Branch, thus it's effectually ſecured againſt any Mixture of Sea Water or other Springs, if the Area about was as well ſecured againſt the Swelling Tides. It has had ſurprizing good Effects, in *Scorbutic Caſes*, *bilious*, and *Habitual nervous*, *Colicks*, *Lameneſs*, *Gravel*, *Diſeaſes of the Skin*; *Stomach*, *Menſes*, *Hyppo*, *Hyſteric*, *Cachexy*, &c.

The Natural Hiſtory of plain Sulphur Waters.

THE Numbers of theſe bears but a very ſmall proportion to that of Chalybeates, and the wildeſt barreneſt places have them both richeſt and plentifulleſt. Theſe that we meet with chiefly in this Circuit, are, *Clythero Whaley*, *Cunleyhouſe*, *Londisburrow*, *Durham*, *Wardrew*, *Mellarby*, *Congleton*, *Drig*, *Willen-hall*, *Codſal Wood*, &c.

Clythero, this lies half a Mile E: of the Town, riſes up between a grove of Wood called the Shaw, and a Brook, into which it empties it's ſelf it ſmeled and taſted very ſtrong of *Sulphur*, tho' expoſed to a violent hot Sun, in a clear calm day in *July*, when I examined it. The Water juſt taken up out of it's Receiver, weighs 22 grs. in a pint lighter than common Water. It's produced of Limeſtone Rock, Depoſites a black Sludge in it's courſe, and ſometimes a white Scum from it's known ſucceſs in Curing Diſeaſes of the Skin, in 1726 one Mr. *Sutcliff* an *Apothecary* of the Town, brought the Spring ſome yards lower, nearer the Brook in a Stone pipe, put down a fine neat ſtone baſon for it, a little below, he built a very good Bath and Bath-houſe, made very fine Walks and intended to have planted them on each ſide, and had ſeveral other Conveniencies, but Death preventing his Execution of the laſt, both Bath, and Bath-houſe are gone to ruine, tho they be in a moſt ſweet place. Four Miles off is *Whaley* the largeſt Pariſh in England, having four Market Towns, 12 Parochial Chapples, beſides Chapples of Eaſe, under this Mother Church on the N: ſide of the Town oppoſite to the Free-ſchool, riſes up a ſmall weak Sulphur ſpring, without Baſon, or any convenience, the bottom of the Hole it riſes up in is covered with black Sludge, it runs through Sandy Gravel.

Cunleyhouſe Spaw, two Miles from *Whaley*, riſes up in the middle of a very Wet Moſſy cloſe of Ground, the ſame as peat Moſs, has no Baſon, but a Hurdle of Stakes and Wans put down in the looſe Moraſs, it's a ſtronger, fuller Spring than falls to the ſhare of moſt Mineral Waters, being a manifeſt Contradiction, even to a Demonſtration, of that Opinion, that all ſuch kind of Springs are the product of a long ſtagnation of Water underground till it putrify. It's courſe is lined with much intolerably fætid betuminous matter, black below and white above, the ſteam of the Water brightens Gold, and preſently turns white Metals black. Round this Reſervoir in ſeveral places of that Field, riſe up many ſmaller ſprings of the ſame Water All of a blewiſh colour, differ little in weight from common water, and all ſmel very ſtrong of ſulphur. It has this peculiar, that tho' it kill inſects thrown into it, yet it has a particular ſort of it's own, ſwiming in many Myriads, they have very large Heads, like little Tadpoles, a ſmall rough body, no thicker than a Horſe hair, terminate in an inviſible Cone or point, whereof the Head is the Baſis, about one fourth of an Inch long in the whole, they are exceeding merry, friſking about and playing with incredible Velocity ſome are White, others, black, but all inviſible except where the Sun ſhines.

Loansburrow Spaw riſes up at the bottom of a Deſcent N E: of the Caſtle within the Right Honorable the Earl of *Burlington's* Park *Yorkſhire* at the ſide of a ſmall Brook, which Supplies his Lordſhips Fiſh Pond's with Water, it's filtred through a blackiſh Limeſtone full of Shells, when this ſtone is freſh dug up and broke, it ſmells intolerably, ſo ſtrong is it of Sulphur. This is the reverſe of the laſt, ſo ſlow that it's next to ſtagnant. The Reſervoir is not a Baſon, but rather a little Pond to waſh mangey Dogs or ſcabb'd Horſes in, which, together with moſt Ulcers, it cures quickly and effectually. In this Spiritleſs, ſtagnant condition it weighs ſenſibly lighter than common Water. The ſmall purling Stream which ſupplies his Lordſhip's houſe with Water, is yet lighter than it, theſe and the Springs by the Ponds are all the product of Limeſtone but not all Sulphurous. This Spaw has two things remarkable. 1 That tho' lighter than common Water, and ſweet when taken up, yet by ſtanding ſix Weeks it became brackiſh Salt, but a Gallon of the Water exhaled left only 20 grs. ſediment. 2 both this and houſe Water with ſolution of Silver, are firſt clear, then a Pink colour, laſtly a dark red. Had this water a deſcent into a good Baſon, and that to empty it's ſelf into a little Bath, it might ſerve much nobler purpoſes, than the preſent uſe it's put to. There is another of them a little from *Malton*, one at *Gunſit*, one at *Glaſſel hall* or *Colms*, a very ſtrong corrent of Water; one at *Lockwood*, another at *Holmforth* &c. All in Yorkſhire, beyond the River *Douglaſs*, a Mile and half from *Maudſlev*, in the great Meadows, riſe up ſeveral outbreaks of *Maudſley* Sulphur Well, from a Vein of the impregnating Sulphurous Marcaſites running in a Line, but the Ground lying low they are covered moſt of the Winter with Water.

Durham Sulphur Well riſes out of a Bore made in the middle of a Rock, on the N: ſide of the River *Ware*, in ſeeking or trying for Coal; oppoſite to *Battersby*. It lies by the ſide of a Brook at the foot of a ſteep bank, it's about equal in weight with common Water, ſmels ſtrong of Sulphur, yet not diſagreeable. This & *Ganſit* both let fall a white Woolly Sediment with Solution of *S*ublimate, or it's Pouder. A little above this on the ſame ſide of the *B*rook, out of another *B*ore in the ſame Rock riſes out a Spring of moſt delicious ſoft Water. About 20 Yards S W. of this, in the middle of the River, riſes out of a Rock a Spring of Salt VVater or Brine, which being overflooded no Tryals could then be made of it. This Spaw is very clear, cloaths every thing in it's courſe with white Rags.

At *Buglawton* near *Congleton*, riſes up in the bottom of the Cleugh, out of a deep Sand, by the Brook ſide, a pretty ſtrong Sulphur Water, intenſely cold; it was diſcovered the laſt Summer, but is almoſt inacceſſible, only this Brook is between it and the Chalybeate.

VVardrew on the Edge of *Gilſand*, between *Cumberland* and *Northumberland*, This being the moſt eminent Sulphur VVater in the three Northern Counties, was diſcovered about 150 Years ago, by ſome Yorkſhire Fiſherman who had ſeen and drunk of Harrigate Water. It ſprings out of *Arden* Rock, over the Brink of the River *Arden*, about 5 or 6 foot above the ſurface of the Water, comes out of a chink in the perpendicular Rock, by a ſmal ſpout. It diſcharges about fifty Gallons in a Minute, very fœtid, being the product of Limeſtone above and behind, and of Ironſtone below. It covers the Rock where it runs, with a very thick white cruſt, Drinkers come to it, along a very narrow Ledge, about a foot broad cut out off the Rock over the River. The VVater loſes it's Taſte and Smel, by carrying to any conſiderable Diſtance, or keeping; nor are theſe Sulphurous Concretions to be found in the courſe of the VVater, which we have obſerved in ſome others. It changes Silver of a Copper colour ſoon, is of the ſame Temporature with common VVater but lighter. It's noted for diſorders of the *S*tomach, Gravel, Sores and Colicks, and Skin.

In the Fields of a Village called *Mellarby*, not far from *Kirkoſwald* was a good plain ſulphur VVater, and the only one in thoſe

Parts; but, tho' the Farmers there have their Grounds cheap enough, yet preferring a little Graſs to the Health of many, they have pulled up the *Baſon*, let in common Springs and defaced it, ſo that we could form no Judgment of it, only that it had been, and would ſtill by care be a good plain *S*ulphur VVater, which the Gentlemen there ought to ſee recovered and ſecured.

A Mile from *Ravenglaſs*, on the other ſide of the Sands, near *Drig*, riſes out of Sandy Hills (thrown up formerly by the Sea, whoſe Tide ſtill reaches within a Mile of it) *Drigwell*, which faces the Morning Sun. It's produced of Ironſtone and Sulphur Marcaſites, like *Inglewhite* VVell in *Lancaſhire*, taſtes and ſmels of both, but the *Sulphur* is loſt in a few Hours after it's taken up, the other principle will carry ſome Miles and keep a few Days, the VVater is very clear, pleaſant, brisk and ſpirituous, yet both it and another which riſes up near it, fill their Baſons and Courſe with Ochrous Sludge. The laſt ſpeedily cures Gall'd Horſes backs, Excoriations, Scab, Mange, loſs of Hair &c. Both being poſſeſſed of a ſenſible, ſlight, volatile *Sulphur*.

VVellinghall VVell or *S*paw two Miles from *VVolverhampton*, riſes up in the N: ſide of *S*tonny Lane, is very clear, ſmels faintly of *Sulphur*, is of a rough hard Chalybeate Taſte, and is ſaid to Purge ſome, but that muſt be from the Bulk and Preſſure of a large quantity ſwilled down, and not from the fixt Purging *S*alts in the VVater, as we ſhall ſee afterwards.

Codſalwood Brimſtone Well: 4 or 5 Miles from *Wolverhampton*, and as far from *Shipnal*, riſes up in a hard, dry *S*and and Gravely Lane, on both ſides the highway; it quickly changes *S*ilver of a Copper colour, leaves a VVhite ſludge in it's Receivers, but ink black below not being richly impregnated with the Sulphur (tho' by far the ſtrongeſt in thoſe parts, but far ſhort of what I have examined) it ſoon loſes it by carriage or ſtanding, here might be a fine Drinking VVater, and a *B*ath too, there being ſufficient VVater for that purpoſe. It's chiefly noted for Cutaneous Diſtempers.

At *Pitchford* in *Shropſhire* is a Well, which in other Reſpects is only common Water, but there is mixt with it, and riſes up to it's ſurface, a kind of Liquid *Bitumen*, like one of the ſame ſort near *Edenburgh*, which is found to be an excellent vulnerary, and good in curing old cacoethic and ſcrophulous ulcers. From *Dr. Plots* long Detail of Sulphur Waters in his Hiſtory of *Staffordſhire*, we expected to have found a great many others, in this Country, as *Tattenhill*, *Wattling* ſtreet, *Ingeſtre*, *VVillow bridge*, *Eccleshall*, *Broughton* &c. But to our great ſurprize, they were all gone when we went carefully to each place in Queſtion of them; ſo that we muſt conclude that either they were never there, or the Sulphur was all exhaled with the Fume of his Wine, or he buried them where the Duck laid ſeveral Eggs in a Day, or at *Newport* ominous Bridge The like Dance with the near the ſame Succeſs, he led us in *Oxfordſhire*. No Engliſhman ever had a capacity more equal to the Work he undertook, and none could diſcharge it with leſs regard to Truth, and their own Reputation; I am ſorry that there is cauſe for ſo ſevere a Remark. *Morton*, (as far as my ſubject led me to follow him) on the Contrary I found faithfull, and exact, in every Circumſtance. Tho' ſhort of the firſt in parts. From this ſhort account of thoſe few plain Sulphur Waters, we beg leave to make the following Obſervations. 1 Becauſe all our Enquiries, Obſervations and Experiments about this Natural Hiſtory, tend to future medical views, in order therefore to be enabled to determine with greater certainty, ſuch their Effects or Virtues, we thought it not enough to know the contents of each Water only, but after long Tryal to enquire at Perſons of probity and tolerable judgment upon the Spot into it's effects, in ſundry and various Diſeaſes, and Conſtitutions, and whereafter ſufficient Experience, a Water is found to have a peculiar power in curing one Diſeaſe or two in particular, theſe we have noted and put down with the Natural Hiſtor. 2 As Chalybeat Waters depoſite their red, yellow or brown Ochrous ſludge, ſo do Sulphur Waters leave in their courſe, or baſon, a Recrement, white or raggy above, but jet black below, both very fetid, and the more richly they are impregnated with their reſpective Minerals, the more do theſe Recrements contain of Iron, Vitriol, or Sulphur. 3 As for our Satisfaction to know the impregnating Minerals of Chalybeate Waters, we ſearched Minutely and exactly, either where we found ſome of them digged through and deſtroyed, or found Miners digging in their origine; or where their Minerals lay open to view, to know the Minerals diſtinguiſhing it from common Water. So where Sulphur Waters have been dipt into on digging, or the origine of known Waters digg'd into, or through and deſtroyed, we always found them produced from large Beds of *Sulphur Marcaſites* called *Brazil* as at *Maudſley*, *Wirksworth* &c. And if theſe ſame *Marcaſites* were mixt with, or joyned cloſe to *Coal* or *Shale*, the Water was both ferruginous, and ſulphurous. 4. As Chalybeats have their variegated Scum, ſo Sulphur Waters often caſt a white Scum, the variegated colour of the firſt ariſing from light Ochre, or particles of Iron mixt with Sulphur, in the laſt, from a little Calcarious, or other Earth mixt with it. 5 As Chalybeats according to their Quantity of impregnating principles, taſte ſtronger or weaker of ſteel, keep it a ſhorter or longer time, let fall a ſmaller or greater ſediment, of a lighter or deeper colour, ſo do theſe Taſte weaker or ſtronger of Sulphur, loſe it ſooner or later, let fall a larger or leſſer quantity of Sediment, turn Silver or other White Metals ſooner, or ſlower, of a Copper colour, or black. 6 That it's impoſſible for us by looking on the Surface, to determine certainly, what Waters are contained in the Bowels of the Earth, for from *Durham*, *Tarleton*, &c. It's plain that there are ſeveral Subterranean Medical Springs, which never appear to the Day except found accidentally. 7 From the Rapid Streams of *Colms* and *Cunleyhouſe* Spaws, and from the two Bores on the ſame Rock on the bank of the *Ware*, one diſcharging a ſtrong Sulphur Water, the other a moſt delicious ſoft Water, it ſeems pretty plain that Sulphur Waters contract not their putridneſs by Subterranean ſtagnation by their ſlow Motion, but by waſhing and being impregnated with Sulphurous Materials in their way. 8 We have taken Notice that as Chalybeates depoſite not their Ochre before they come to the Day, or the Air has Acceſs to them, neither do Sulphur Waters part with their Sulphur ſooner, but near the Day we have found ſublimed Flowers of Sulphur in ſome of them. 9 From the vaſt Number of Chalybeats every where, may we obſerve the tender and great Regard the Author of our Beings has for our welfare, that as the Number of chronics every where ariſing from Obſtructions, or Sizyneſs of the Blood, ſo the Remedy is both as plentiful and as common. 1 From the ſmall proportion that plain Sulphur Waters bear to Chalybeats in general, ſo are the External Defædations of the Skin by Itch, Scab, or Leproſy, in Compariſon of Diſeaſes from obſtructions of the Viſcera. 11 We have obſerved, that in wild and Mountainous places where theſe Eruptions are frequenteſt, from often ſudden Blaſts, greater extreams of the Air, as well as it's greater preſſure, obſtructing perſpiration, there generally we find moſt Sulphur Waters. 12 As Chalybeates Taſte and Smel of Iron, ſo do the other of Sulphur. 13 As the firſt have their Mineral Spirit and volatile principles, ſo have the laſt, whereby they both weigh lighter on their firſt riſing up, than afterwards. 14 As the firſt turn white muddy, or let fall their ochrous or calcarious ſediment by ſtanding; ſo do the laſt loſe of their Cryſtaline Tranſparency, become white, whitiſh or muddy, and let fall a white ragg'd ſediment. 15 Where the volatile principles are ſmall, and ſit light in their Vehicle, the Water muſt be drunk at the Spring, by ſuch as expect the Benefit of thoſe principles, and not be carried, or let ſtand before Drinking. 16 From the whole natural Hiſtory of thoſe Waters taken together. we find ſome grounds to inferr (tho' not yet to conclude with certainty) 1 That Waters called Sulphureous carry in their pores diſſolved Sulphur, from their Smel and Taſte, as well as theſe called Chalybeates contain ſome of the principles of Iron, from their Smel and Taſte, being that of Iron ruſt or ruſty Iron, 2 That the Waters of both Claſſes ſeem to contain either ſome very Minute, ſubtle particles of matter, lighter than either the Water in which they are lodged, or the incumbent Pillar of Air reſting on the equal Surface of that Water, but ſeems to take wing and fly out of it, and is therefore ſaid to be volatile, and ſeeing it eſcapes both inviſibly and inſenſibly, we call it a Spirit. That ſuch a ſubtle matter or Spirit, exiſts in, and preſides over theſe Waters, as they come out of the Earth to us, is Manifeſt. 1 from their weighing lighter when they come freſh up, than when they have ſtood a long time out of the Spring. 2 From their purity and clearneſs when juſt taken up. 3 From their ſenſible briskneſs and ſpirituouſneſs to the Taſte. 4 From their more ſenſibly raiſing and cheering the drooping Spirits of the Drinkers. 5 from their ſitting lighter upon and going ſooner of the Drinkers Stomach. 6 From their more remarkably whetting and ſharpening the Appetite, and that in a leſs time. 8 From their ſparkling or flying like Champaign or Cyder, when poured into a Glaſs or Cup. 9 From their ſometimes inebriating quality, whereby they make their Drinkers fuddled or drunk And the more richly any Water is impregnated with this Spirit, the more viſible and ſenſible are all theſe ſigns of it. The Water coming to us, from the Bowels, at leaſt from under the Surface of the Earth, where we know of no vegetating plants or Herbs, is not therefore a vegetable, but a Mineral Spirit. But whether this Spirit be the meer Spring of a lately more compreſſed Air, expanding it's ſelf in a more rarefied Atmoſphere, where it's former Weights are taken off, or it's exceeding ſmall ſubtle particles of Matter abraded from, or the Reſult of ſome ſubterranean in explicable (becauſe not known) Fermentation of Minerals of a different Nature, whoſe particles are wrapt up in that Air lodged in the pores of the Water, or whether that ſame ſubtle Matter may be ſo fixt, as to be brought under our ſenſes and Examination, or being infixable, will ſtill remain volatile, we ſhall not here determine, or whether it's only the meer Water filling a larger ſpace in one ſtate or time than in another. But that this proproperty, quality or ſpirit is quickly loſt after the Water is taken up we are as ſure, as that we once had it; for that being gone the Water weighs heavier, turns whitiſh, browniſh, yellowiſh or muddy, ſoon after lets fall a ſettling, is leſs brisk, pungent, ſpirituous and pleaſant to the Taſte, neither ſo ſenſible exhilerates, nor intoxicates, ſparkles leſs or none, ſtays longer on the Stomach and in the Body. 17 Tho' viſible, external ſoils ſeem to ſend out theſe Waters indifferently, yet under that viſible ſurface lye various kinds of Minerals, which variouſly impregnate the common Element, according to the ſundry Minerals, hence we have various ſorts of thoſe Waters. 18 where the Brazil lies in Sand, Gravel, Clay or Freeſtone, it's a Sulphur Water only.

OF

Of the Purging Sulphur Waters.

THESE are *Maudſley*, *Moffat*, *Deddington*, and *Ganesburrow*, *Leak*, *Kingham*, *Chadlington*.

The Spring that firſt chalenges our Conſideration under this denomination, is *Maudſley*. This was taken Notice of in *Queen Elizabeth's* time, from great Flocks of Pigeons reſorting thither to drink the Salt Water, and pick up the candied Salt in Summer. It riſes through a Chaſm between two Rocks, one from the E: the other from the W: with which laſt the Water ſeems to terminate, for no Brine could ever be diſcovered a few Yards to the E: During the foreſaid Reign, a dispute happened between two Lords of the Mannor, viz *Aſton* of *Croſton*, and *Latham of Purbold*, about a piece of Ground, which remained undetermined till of late, that it was divided among all the adjoyning Freeholds, and was therefore called *Threapers green*, it lies between *Maudſley* and *Wrightinton*. In the Middle of this now cultivated Ground, riſes up a Spring, ſlow, but intolerably fetid, the Water of a blewiſh colour and briniſh Salt, (tho' abundance of common Water is mixt with it) which was tried on that account for a Salt work about 1612, ago but being too near the freſh, after all their pains and ingenuity, the laſt broke in upon their works and ſo weakened their Water, that it did not anſwer Expences. After this it laid unnoticed till 1660, that two Men (*Acton* and *Wright*) from *Nantwich*, came and made a freſh tryal near the old works. In digging they went through a thick ſtrong white Marley Corn mould, then a very black bituminous Earth, full of great ſtrong Lumps or Lays of Sulphur Marcaſites, then a very hard Bed of Rock 12 Yards from the Day. One half of that Eye through which the Water ſprung up, was on this Rock, the other half was in thick Earth, on boring 7 or 8 Yards deeper, they dipt into a 2d Spring far more briny than the firſt, on taſting this ſtrong Brine, the undertakers packt up and bid farewell, without ſhowing any

Reaſon for this ſudden change, only dropt ſome dubious Expreſſions which occaſioned various Speculations. Whilſt the workmen were employed in digging, their Tobacco boxes, Knives, Money &c. In their Pockets turned firſt Yellow, then of a Copper colour, and laſtly black. (but were ſoon reſtored by dry rubbing) So plentiful and powerful were theſe Sulphureous Exhalations that ſeveral times they ſtruck moſt of the Workers blind, and confined them 3 or 4 days to bed, without any further harm. What great medicinal Advantages may we not reaſonably expect from a VVater thus richly impregnated with Sulphur and Salt vieghing one with another, which to be moſt profuſe in beſtowing their principles to this deſpiſed and neglected Spring, which the Drinkers or Bathers may at any time alter to their purpoſe, having both a noble light Chalybeate, and good ſoft VVater at hand Or if in the Summer time, we take theſe out breaks of this ſame Sulphur VVater, which riſe up in the great Meadows a Mile and a half beyond *Maudſley*, in the right honorable the *Earl of* Derby*'s* Eſtate, which are impregnated with the ſame Sulphur but leſs Salt. However in this mean Dreſs, *Maudſley* has not only cured cutaneous Diſorders and Ulcers, but even a begining *Hydrophobia*, by frequent Immerſions.

Ganesburrow in *Lincolnſhire*, Is a pump S E: of the Town, Springs out of Sand, and probably ſoft, red freeſtone, it's alſo a weak Sulphur Chalybeate VVater, tho the Smel and Taſte are equally ſenſible of both, at the Spring, eſpecially in a foggy morning neither this nor the next will bear ſoap, tho' both ſerve domeſtic uſes upon occaſion and will boyl with Milk.

At *Deddington*, a ſmall Market Town 4 Miles from *Banbury* in *Oxfordſhire*, is a Sulphur Chalybeat VVater, riſing out of a ſtrong thick blew clay in Mr. *Lanes's* Farm Yard, the VVell is a Pump 16 foot deep.

Now for ſome of the Rev'd Mr. *Herberts* Sulphur VVaters. And *firſt near* Church hill Miln, *in the Pariſh of* Kingham, *is a notable one obſerved by Dr.* Plot. *It Stinks intolerably, is of a greeniſh colour and Saline Taſte. It's a true* Bog *of* 15 *Yards Diameter, and of an oval Figure. It's head is about* 4 *foot long and two over;*

it's inacceſſible without Boards or a Ladder to walk on, and prevent ſinking. It lies in a Level, in that part of Kingham Fields call'd Cullver Pitts, *about* 130 *Yards from the above* Miln, *almoſt in a ſtagnant ſtate. The Water is only greeniſh in a very great Drought, or in Summer when it's covered with a thin pellicle or ſcum. This like all other in land Salt or ſaline Springs, is very much frequented by* Pigeons. *The Mud is Ink black,* and ſo *deep that the longeſt Pole cannot ſound it's Depth. The Water is intolerably Sulphureous, and when taken up full of Films and Spongy Earth, for want of a Receiver, therefore was ſtrained before Evaporation; it has never been applyed to any medical uſes. The Water when almoſt boyled away, appeared like Salt boyling in the Salt Pans, before it's raked off with Scummers; when the ſediment was taken from the fire and cold, it was like the bright part of Briſtol Stones, united in different Configurations.*

This VVater would make a very good Purging Sulphur VVater, either for drinking, bathing or waſhing in, were the Spring taken in to a proper Stone Receiver, and the freſh or common VVater made out. It's Salt is a fine Nitre but what Quantity it contains, it's impoſſible to ſay in this State of Mixture with other Springs, Drains, and Rains.

Let me now amuſe you with another Salt Bog, *which I have lately diſcovered in our Pariſh of* King's Sutton; *Juſt contiguous to the Village, and a little from* Aſtrope. *It's about the ſame ſize, form, depth, and ſmell of* Kingham, *as open and inacceſſible, but Salter, and has the ſame Reſort of* Pigeons. *This is* Leak meadow Bog, *It lies at the lower end of the Meadow, about* 10 *Yards from the Ditch. It's intolerably fœtid, taſtes like gum pouder, and leaves a durable Saltiſh warm pungent Taſte on the Tongue, like Salt of Tartar; ſmels like rotten Eggs; turns Silver of a reddiſh deep copper colour in* 30 *Minutes, breeds and entertains a peculiar Inſect of it's own, as large as a* Graſhopper, *it has Six long Legs, three on a ſide; but the Body is very much depreſſed and thin, covered over with a Shelly coat like a crabs, and I think has Wings. The VVater is alſo covered with a blew Scum, it's Mud jet black, and Stinks not to be born with near. There is a drain in the Meadow comes* *into it, beſides it's own freſh Springs in the Bog, & drains from the Land, in which condition you have it's fixt parts in the Tables, which will certainly be double or treeble, when we have found the true Spring, laid a Baſon walled it about, and made out the Springs and Drains of common Water. This will be a great Addition to our place, and Encouragement to ſtrangers, for, as we have one of the moſt eminent ſucceſsfull Chalybeats in England, now we have diſcovered, a no leſs uſeful* Purging Nitrous Sulphur VVater, *both for internal and External purpoſes, for drinking,* Bathing, Waſhing, or application of the Mud to the Body, for diſcuſſing, and healing of Tumours, Ulcers, Leproſy, Scab, Itch, Freckles, Spots and all other cutaneous Erruptions, Scurvy, Pains &c. *Now we are able to vie with any place in* Britain *for a ſett off the beſt Mineral Waters of the kind, either Purging or alterative; eſpecially when you have taken in* Cliffton, *which you and I examined in* Octb: *and I reexamined in* March *laſt. I ſhall only add, that in digging* Lord chief Juſtice Willes's Well *a little above* Aſtrope Well *There was* 1 Corn Mould. 2 a Rock five foot thick, of blew and red freeſtone ſtreakt. 3 a thin ſtratum of blew Clay. 4 a Limeſtone Rock thirteen Inches thick. 5 a Bed of blew Clay, all lying in Veins full of Selenites, Stalactitæ, *and other bright Sparkling Minerals.* Ironſtone *is near.* May 3. 1739 *Dr. Sir. as on* April 14 *laſt. I ſent you the account of* Kingham and Leakbogs, *which tho' exact and carefull, yet perhaps may be out in ſome Forms.* ---------- *On Recieving your laſt. I went directly to repeat the Experiments on* Cliffton Spaw, *two Miles from us. It riſes up about eight Yards from the River* Charwell, *on a ſmall Eminence, which hinders it's being overflooded. It's about two Lands lengths* S: *of* Cliffton, *has been walled about, is about four foot Diameter and ſixteen Inches deep; it has been long noted for the ſpeedy and effectual cure of the Mange in Dogs and many packs are Yearly brought there to be Waſhed. I could find no ſuch thing, as Salt particles left ſhining on the Stones and Earth over which it runs, as mentioned by Dr. Plot, who is alſo miſtaken in it's ſituation, and the degree of it's* Saltneſs. *It has an acrimonious Taſte but no Roughneſs, and Smells a little of the Earth. A dram of Alum diſſolved in a little Water and mixt with a Quart of this Water, as* Dr. Plot adviſes, *ſcarce afforded the like* *quantity of* Sediment *by præcipitation, it was Yellowiſh like what fall to the bottom, by ſtanding all Night in a pot. The like weight of Allum diſſolved in Water and put to a quart of Urine, depoſited a* Sediment *of a whitiſh colour, like a very tender Curd of a Poſſet, about a 5th part of the whole, Urine only made it muddy. I evaporated a Gallon of this Water and when it was near gone, it was cruſted over like a pot of ſtrong Glue, roſe up in ſeveral broad Bliſters, threw out a naſty* Stink, *like Glue burning in the Pot, the ſediment ſtuck to the ſides of the Veſſel it was boyled in like Glue. A little of the ſediment expoſed a ſmall time to the open Air ſoon diſſolved like* Salt *of* Tartar. *You will find it perhaps the moſt alcaline ſediment ever you examined.* ———— Dr. Plot *mentions a ſalt Bog* in Mr Rawliſon's *Grounds of* Chadlington, *ſtronger than* Kingham, *but I beg leave to ſay it's neither ſo ſtrong of* Sulphur *nor lies in Mr.* Rawliſon's *Grounds, tho' a quarter of a Mile below his houſe, in a ſmall Green called* Greenhills *between* Twelve Acres wood *and* Greenill wood; *not on the ſide of the laſt but oppoſite to it's head. The Water is of a ſubſaline Taſte, ſmells like the Waſhing of a foul Gun; all theſe were examined in a cold Seaſon, viz in Winter, when their ſuppoſed ſtagnation could not poſſibly produce Putrefaction; but much freſh getting in, muſt lower their fixt Parts, and leſſen them very much, by ſo great Rains.*

In the laſt Week of July 1739. I reexamined this Sulphur Water in Leak bog, and found the Account ſent me; was faithfull and juſt; and hope, that as they have now made a very good Bath in the ſpare Water of *Aſtrope* Well; ſo they will ſoon encloſe this Sulphur Water, both for a purging Water, and a Bath.

Now came we to *Moffat Well* in Anandale, which tho it lye neither within our preſent Diſtrict, nor is entittled to this claſs, if drunk in a moderate Doſe, not having fixt Salt enough in it, yet to the laſt, what it wants in Qualtity common Drinkers ordinarily make up in Quantity, ſwilling down 8 or 10, or ſometimes 12 or 15 Engliſh Quarts in a forenoou, till it prove both emetic and catharctic, and ſuch generally as content themſelves with 8 or 10, receive a great dale more Benefit; than ſuch as drink it regularly viz in 3 or 4 Engliſh Pints. As to the firſt; it's the next Water of Note to *Cumberland*;

berland, nor could I come ſo near and paſs it by in Silence, when I reflect on the great Benefit it was off to me when a Boy at ſchool there, and ready to ſall a victim to *Stone* and *Gravel* of which it perfectly cured me, with Hundreds more of the ſame Diſeaſe. ------ Mr. *Mckaile* Surgeon wrote a Treatiſe on this Water in Latin in 1662, tranſlated, and publiſhed it again in 1664, wherein he impregnates it with putide *Sulphur of Antimony*, *Nitre*, and *Sal Armoniac*, without any Tryal, he is a meer Adept, and totally a ſtranger to the Scientific Method --------- In the medical Eſſays of 1733 we find a diſcourſe on it's Virtues and uſes by Mr. *Geo*: *Mulligen* Surgeon in *Moffat*; but not a word of Enquiry into it's principles. This is followed in the ſame Years Eſſays, by a ſett of very curious and ingenious Experiments made by the learned Dr. *Plummer*, fellow of the Coledge of Phyſicians at *Edenburgh* & Profeſſor of Medicine in that univerſity. He finds it contains Sulphur, Sal Gemm or Marine Salt, and little Copper. *Mr. Mulligen* aſcribes the Diſcovery of the Medicinal uſes of this Water, to Biſhop *Whiteford's* Daughter married into that Neighbourhood in 1633, and that ſhe was at the Expence of clearing the Grounds about the Springs, and letting off the Moraſs that covered them, we ſhall not contend about this pious Ladies Judgment, Humanity, and Generoſity, *Moliter jam oſſa quieſcant* But I beg leave to aſſert not only from Mckaile, but from living Evidences, with whom I was particularly acquainted, during my 5 Years ſtay there; that this was not known as a Medicinal Spring before 1655, but went by the Name of Stinking Bog, or Marſh; *Wardrew* three Miles from *Brampton* in *Gilſland* being the only Mineral Water in Vogue North of *Harrigate* and *Buxton* at that time, but ſome going to *Wardrew*, going on the Backſide of the Hill N: of *Moffat*, obſerving a ſtrong Sulphur Smel, followed it, and by this, and Enquires were directed to the place, where quickly finding the Reſemblance between the two, ſtopt here and went no further. This was in 1656 or 57. here finding the ſame Effects as at the other, they acquainted the Neighbourhood with the nature of them, on which the ſick and diſeaſed around flocked in to them, and many found Benefit. The Earl of *Hartfield* (ſoon after made *Marguis* of *Anandale*) being apprized of them, in 1659 cauſed the Moraſs to be let off the ground about to be cleared, and the ſprings to be made more acceſſible and encloſed with a ſtone Wall, and ſtrong

Locked Door, in order to have made a gain of them, but the liberal Donor prevented the Sale. The Water Springs out of a Rock at the ſoot of a Hill, on the top of a precipice about 3 Yards perpendicular, over which the Water falls into a beautifull clear murmuring Rivulet, on the oppoſite ſide are ſome ſmall ouzings of the ſame ſort of Water. The place on each ſide is compaſſed about with very lofty Mountains. The Stones above the ſurface are a courſe grained Gret Stone, the range of Rocks below are Limeſtone, or Gret, I will not now be poſitive, but it's full of clear regular figured cryſtals, of a ſparry kind, and a ſofter ſort of a white Gray or Leaden colour, and often gliſtering of a Gold colour, much of this laſt is *Brazil.* All of them, either ſtruck or broken, ſmel intolerably ſtrong of Sulphur. There are no ſenſible or veſtigable Marks of Steel or Vitriol in the Water. I had it carefully examined at the Fountain, in 1731. And ſome Bottles of both Springs being ſent me, well Corked and Sealed, after 140 Miles carriage and 19 days keeping, it ſmell'd as ſtrong as at the Spring, tinged *Silver*, of a deep Copper colour in 15 Minutes. it immediately precipitated Silver out of it's ſolution, brightend Solution of Gold. The like it did at the Spring in 1733. Galls or other aſtringents altered it not, 64 *lb* of the lower well evaporated left a Snow white Saltiſh ſediment, on which warm Water being poured it ſmell'd ſtrong of Sulphur for a Minute. The Earth when ſeparated from it's Salt, ſwelled, ſmoaked and boyled by droping acid Spirits on it. The Salt alſo, with Spirits of Salt fermented, and ſmel'd ſtrong of Sal armoniac, alcaline Spirits affected neither. The upper Well Sediment was not quite ſo white, the Reſult of my Experiments on it's ſediment, was the ſame. It's commonly called the hungry Water, from it's lightneſs on the Stomach, and the voratious appetite it gives the Drinkers. Haſty Pudding made of it with Oat meal, is whiter ſhorter and lighter than any other, it makes exceeding light Bread, on all places where it comes, it leaves a white ragg'd, intolerably fetid Sediment; on the ſurface of the Rock over which it runs, it leaves a white Stalactitious highly alcaline Incruſtation. The upper Well being ſtronger is more nauſeous to the Drinkers, but bears warming bettter for bathing. As it has been of moſt extenſive Benefit, ſo it's peculiar Excellency lies in curing habitual nervous, convulſive, and hyſteric colicks, in which I do not remember one inſtance where it failed, yea in ſeveral who had it from their birth, and were arriv'd at full growth, tho often in eminent Danger of Life. And ſuch who have been ſo worn out and enfeebled that they could not reach the place, theſe Stony Sulphureous concretions hewn out of the Rock and ſent them, has been of notable Service, given in Pouder with any ſmall tepid Liquor. The Kings evil, and all cutaneous Erruptions, the Gravel, pain of the Stomach, and warm bathing in it for the Rheumatiſm. But withall it muſt be confeſſed no leſs dangerous to hectical perſons from a ſlow Inflammation of the Lungs or ſome part of them, few Years without a victim of one or more of that Kind.

The colouring Ingredients gave no further inſight into this Water, either immediately mixt, or when they had ſtood 24 or 48 Hours. Only Campeachey gives it a deep blood red colour; Sugar of Lead and Oyl of Tartar, whiten it, and throw down it's Earth; Syrup of Violets turns it green The Vein of Sulphur is viſible at the bottom of the brook below the precipice, and in the Banks on each ſide 4 foot below the ſurface; and even ſome ſmall outbreaks of this vein may be found in the coarſe Rocks of Gretſtone above. At ſome little diſtance above the Well, may be heard a murmuring noiſe of the Water coming down the chinks in the vein. There is an outbreak of a weaker water of the ſame ſort both at Granton and Brakenſide, ſo that the ſame vein ſeems to run S E. and N W. between theſe places 5 Miles diſtant, if it reaches no farther. The Water turns Silver of a Copper colour in three Minutes and a half; but if they are ſhaken all the while, it coloured in two Minutes, if carried 20 Yards from the Spring, it's 12 Minutes in colouring; if carried a Mile in a cloſe Cork'd bottle, it's 25 Minutes, if it ſtand 24 Hours before the Silver is put in, it colours not at all ---------- on the oppoſite ſide of the precipice to the Spring, might be made a very good cold Bath of Sulphur Water, of ſpecial uſe in Ulcers cutaneous caſes and pains ---------- This Spaw, or Well has brought forth a Daughter ar Carſtarſen two Miles from *Edenburgh*, but a very weak one and unequal to it's Mother. It taſtes a little rough or Ironiſh, turns Purpliſh with Campeachey. The firſt riſes of a mountain of Rock. the laſt out of Mud and Clay; that clears it's ſelf in a ſmall ſtream falling into the brook below, and can never be flooded, this is ſtagnant, is often overflooded both from the Land

and the Rivulet which runs cloſe by it's Side. It contains far leſs of both volatile and fixt principles, and the laſt of quite a different nature, and can never with any Juſtice be brought in Competition with the firſt; as appears from the Tables below. It Springs up in a low fertile Ground, about two Yards from a lake ſide, or ditch of Moraſs, which has a very ſmal Deſcent for it's Water to paſs, till it's often cleaned out. ---------- There was another of this ſort lately diſcovered in a Freeſtone Quarry near Sir. ---------- *Kirk-Patricks* of *Gloſeburn*, but it was quickly loſt under the Rubbiſh in Digging & Letting in other Springs, ſo that having been neither much uſed nor examined, it's Principles and their Quantites were never known.

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Of Nitro, Calcarious Purging Waters.

THESE are *Cheltenham*, *Comner*, *Moretonſee* Pump, *Cliffton*, &c.

Cheltenham, ſix Miles from *Glocester* and ſeventeen from *Worceſter*, juſtly chalenges the preference of all the Purging Waters of *England* of this claſs. It riſes out of a Sandy ſoil, the ſame on which the Town, and all two Miles about it Stands; The ſituation is elevated, therefore dry and pleaſant, yet moſt fruitfull, hence a plentifull product of all things neceſſary for Life, and innocent pleaſures. This Market Town lies only two Miles from the lovely *Oulds* of *Oxfordſhire*, high charming Hills, richly cloathed with much ſweet Graſs, Herds, and Flocks, a moſt extenſive, beautifull Proſpect by Sea and Land, a dry thin, pure, healthy Air, fit for Pleaſure and Diverſions all the Summer. A little S: of the Town, is a ſmall Aſcent, under whoſe Sand is a ſtrong thick blew Clay or Marle; here is a cloſe, where an ouzing ſlow Spring was long obſerved, which ſpread a few Yards on the Surface, and then evaniſhed; to this came dayly many Flocks of Pigeons; which one Mr. *Maſon* taking Notice off; and having ſome Land of his own joyning within eight or ten Yards of the Spring; he digg'd to a conſiderable Depth in his own Ground, expecting to find the original there; but miſſing of it, he purchaſed the Field with the Spring; then it was made into a Well; and after ſome Experiments made with the Water by the late ingenious Dr. *Baird* of *Worceſter*, and the preſent Dr. *Greevile* of *Gloceſter*, it was ſold Medicinally, till 1721 that a very worthy and ingenious Gentleman took a Leaſe of it at 61 *lb* per Ann: after the Death of Mr. *Maſon* and his Son, it fell to Capt: *Henry Skelliecorn*, the preſent Proprietor and Poſeſſor, in right of his Lady Mr. *Maſons* Daughter, who coming to it in Summer 1738 has built two large Stately Rooms for the Drinkers, beſides ſeveral other Conveniences; ſecured the Spring from all extraneous matters, covered it over with a ſhade, and laid a pretty large, court about it, of Freeſtone, and built a Shade round the court to the Wall and made curious Gravel Walks &c. and goes on ſtill to improve it. Being a Gentleman of the greateſt Integrity, Tenderneſs, Humanity and Benevolence; who courts opportunities of Showing Compaſſion and doing good Offices to the afflicted tho' never ſo needy or deſtitute, yet poſeſt of an Eſtate that renders him quite independant of the Profits of the Spaw. ——— All below the Well is Clay or Marle; for tho great Quantities have been dug up at ſeveral times, to five or ſix foot deep, yet they reach'd no other ſtrata of Earth, or other outbreaks of the Water. The Spring is five foot under the ſurface, yet the Water riſes up exceeding clear, of a bitter Salt Taſte, weighs as it riſes up 50 grs: in a Pint heavier than common Water, but encreaſes 20 grs. more in Weight, by ſtanding a little; the Spring affords only 35 Pints in an hour, which is ſufficient for 350 Drinkers. The neat ſtone Receiver being contrived to contain all it's Water for 36 Hours; it has a cloſe board Frame and Lock over it, and a Pump at one Corner, to clear off the Collected Water into Bottles, and come at the freſh Spring as it riſes up. It's drunk from one Pint to three, and Purges powerfully, being a very Brine of Nitre, and the only one yet diſcovered in all the Counties whoſe Mineral Waters. I have examined, hence whilſt other places boaſt of their Purging Waters, *Cheltenham* has juſt cauſe, not to envy, but glory and triumph over them all, both for the Richneſs, Singularity, and ſucceſs of her Waters, according to the Quantity and uſe of them in ſo few Years. Which I cannot expreſs better than in the words of an Ingenious, impartial Gentleman, who has been an Eye Witneſs for many Years, and made faithfull and judicious obſervations on it's Effects. Novr. 3. 1738. *Sir, you may depend upon the following Account, being carefully repeated obſervations of my own; in all Scorbutic Habits of Body, the Waters are of univerſal eſteem with great juſtice, and will cure old ſcorbutic ulcers, tho of twenty Years ſtanding, even in the Leggs, which being the moſt depending part, I take to be the moſt difficult: Eryſipelas, Strumous Inflammations of the Eyes, and thoſe tormenting pains of the Hipps and Lumbar Muſcles, from Lodgement of hot ſcorbutic Salts, that ſuch Number of people are ſo often afflicted with, and ſeldom cured in any other place. in the Gravel it's very ſervicable by cooling and waſhing the urinary paſſages. In Aſthmas I have heard it much praiſed, but never ſaw* *it uſed in that caſe. It never fails to give a keen appetite, and if drunk at the Spring immediately Pumped up, it gives great Life and Cheerfullneſs to the Spirits. Tho' the Vulgar drink it in large Quantities, yet from half a pint to a Quart dayly is ſufficient for any Conſtitution, a pint drunk at bed time, will lie quiet all the night (that would Purge in two hours in the Morning) and is eaſily ſet a going next Morning with a moderate Doſe. ——— I muſt further take Notice that the Water is a great Provoker of Venery.*

I cannot here omitt ſome things more remarkable, which I have not obſerved in any other of that Claſs, as 1 It's greater Exemption from Gritty coarſe Earth and Sand; having only a little Subtile, fine impalpable alcaline Earth mixt with it's Salt. 2 The quicker and eaſier cryſtalization of it's Salt beyond that of any other, for not only do they Cryſtalize immediately in a ſtrong Lixivium, as in one night but the Water thrown out of a Glaſs or Mug at the Spring, the Salts Cryſtalize preſently like clear tranſparent Ice on the Pavers, and ſides of the Well. 3 The Cryſtals ſtand longeſt in the open Air of any Sal calcarium I have met with, ſo that I have had them ſtand ſeveral very rainy Seaſons not moiſt or liquified in the leaſt. 4 It's Salts are not only, the bittereſt I have taſted, but inſtead of Cooling and Chilling the Mouth and Tongue like other Nitre, they warm and give a Glow ſome what like marine Salt. 5 Tho' the Cryſtals, like other Nitre, will not ferment in the leaſt like marine Salt or Alum, even with the ſtrongeſt acid Spirits; yet the Water ferments the moſt violently with them, and turns *Syrup* of *Violets* the deepeſt and ſooneſt green of any; eſpecially when the Water is hot, for then 20 drops of the Spirits put to a ſpoonful of Water makes it foam & hiſs. The Water was warmed in a vial well corked and inverted in a Pan of Water, thus, it alſo turned quickly purple with *Solution* of *Silver*, and an opac blood red with *Campechy.* From the peculiar warmth of it's Salts, it neither chills the Drinkers, like other rich *Nitrous* Waters, nor heats them, like thoſe impregnated with marine Salts. 6 This Water operates with the greateſt eaſe of any Purging Waters, being never attended with *Gripes*, *Teneſmus*, or *Straining* at Stool. 7 It moſt effectually and powerfully cleanſes the Uropæia from Sand, Sludge, and ſmall Stones, without leaving it's own coarſe Earth in the Blood or paſſages, to be the foundation of a freſh fit. What a noble rich Nitrous Water, with a fine healty clear Air and dry Situation, can do for recovery or preſervation of Health, may be expected here. There is alſo a cold Bath near the Spaw: And ſeveral Chalybeate Waters ouzing up. Two Miles from *Cheltenham*, at *Preſbury* is a ſmll light Chalybeate; it has a ſtrong brisk Spring, but quickly loſes it's Steel by carriage a ſhort way It's Water is a pale purple with *Galls* and *Sumach*; the firſt turns a little Peas bloom, the laſt Yellow. It's purple with *Solution of Silver*. Firſt blewiſh, then Graſs green with *Syrup of Violets*; blood red with *Campechey*. It alters not with the other Articles uſed, and affords a meer ſcantling of fixt parts by Evaporation, not to be regarded.

A Mile from *Cheltenham*, down an eaſy deſcent, lies *Arle* Well, on the S: ſide of the Road, on the left hand from *Cheltenham*. It riſes up perpendicular in the middle of a ditch of common Water, under a Hedge, in a Hole made in the Ditch, fill'd up with Sludge and Weeds, where the common Water ouzes and runs into and mixes with it, wherefore no juſt eſtimate can be made of the quantity of it's fixt parts, except the Mineral Water was kept without Mixture of the other, however it contains Nitre and Alcaline Earth, the Salt is full as bitter and pungent as that of the laſt. This Water is neither ſo clear, pleaſant nor brisk as the other; becauſe of it's Mixture with the ditch Water. It's Salt is alſo much different, being not *Calcarium*, but the ſame with *Aſtrope*, both in Colour and Cryſtals.

Comnor or *Cumner* in *Barkſhire*, four Miles W; of *Oxford* has been a Water of Note the laſt thirty Years, the Water is brought three times a Week, all the Summer ſeaſon from *Cumner* to *Halywell* Pariſh in *Oxford*, the Well is in the Eſtate of the Right Honourable the Earl of *Abingdon* it's the product of Limeſtone only, hence it's always of a whitiſh colour, eſpecially in Summer, when the Well is low, but in Winter, and rainy Weather, it's clearer and top full, being affected by Rains or Drought. The Baſons about a Yard ſquare and above a Yard deep, it's on the Road to *Bablickhive*, Doſe from a Quart to two or three to Purge Ruſtics.

Moreton-ſee Pump Water, two Miles from *Market Drayton*, *Shropſhire*, it riſes from Gravel and Clay, is an excellent cooling diuretic and purge. Operates very ſtrongly, and is the only one in theſe parts. It curdles Soap and Milk, is very clear and fine, loads not the Stomach, and ſoon finds a back door.

Cliffton new Well, within a Mile of *Deddington Oxfordſhire*, and about a furlong S: of the Village, and about a Dozen Yards from *Charwell* River at the ford of the Meadow, it's a clear, fine, Laxative Water being pretty rich in the moſt Alcaline Salt, I have ſeen in any Water.

Hiſtory *of a Nitro Aluminous Purging Water*

OF this uncommon ſort we have heard of, and examined only one in *England*, and therefore may juſtly call it a Water *Sui Generis*, which for the Richneſs of it's impregnation, ſingularity of it's Compoſition, excellency of it's whole Principles, and wonderfullneſs of it's Effects and uſes, may well ſerve inſtead of a great many, viz. *Holt* near the ancient ſeat of the noble Family of the *Nevils* in *Liecesterſhire*; it's ſituated upon a Hill in that Angle of the County, which is bounded on the S: by *Northamptonſhire*, where the *Weyland* runs at the bottom of it, and parts the two Counties, and on the E: and N: E: by a Rivulet called the little *Eye*, which ſeperates *Liecesterſhire* from *Rutland*. To the VV: and N: lies the reſt of the County, toward the VV: and S: the Hill extends it's ſelf into an ample plain, but is more contracted toward the N: E: where it ends in almoſt a point. The Aſcent is almoſt equally ſteep on all ſides and very high. The largeſt part of the plain on the top of it, is every where rich Land, tho' it lie chiefly on a Clay, but the Soil that covers it is very fruitfull. On the VV: a great quantity of white Sand, and Yellow or rather ruſt coloured ſtone is dug up, called red ſtone, which at firſt is very ſoft, but when it has been made uſe off and ſtood the Froſt, turns very hard and durable. There's alſo a hard white ſtone, very good for Lime, and paving, but the greateſt quantity is of a very hard ſtone, which lies in larger veins, and is got up in great Slabbs, this on the outſide is exactly the colour of Iron ruſt, and when broken appears blewiſh, very much reſembling Iron juſt cold from the Smith's Furnace.

Half a meaſured Mile E: of the Capital Meſſuage, and Town adjoyning in a cloſe formerly covered with Wood, was diſcovered this Mineral Water in the Year 1728, and has ſince been made uſe off with great Succeſs, not only by the adjoyning Country, but has been ſent into all parts of the Kingdom, to the great benefit of ſuch as have uſed it. It was firſt diſcovered by an attempt of the Tenant who rents the cloſe, to dig a Pond for the uſe of his Cattle, in a place on the ſide of the Hill where he always obſerved Moiſture, which he expected would afford him Water. As ſoon as he had removed the ſoft boggy Surface, there appeared in the ſtiff hard Clay, ſome what like a Honey comb full of little Holes and Yellow, and on breaking it, was lined with a hard Ruſt exactly like that of Iron, but when he had dug and finiſhed his Pond, the cattle would not touch the VVater, which was rough brackiſh and bitter; tho nothing equal to what it is now, ſince both Rain and Land floods are effectually ſtopt from getting into it; the Sludge in the bottom of it was extreamly black; thus it laid till 1730, when it was thought proper to ſend up ſome of the VVater to the late Dr. *Strother* of *London* to examine who pronounced it to be a Nitro calcarious Chalybeate; upon this, together with Dr. *Farrer* of *Market Harboroughs* Recommendation of it to ſeveral of his Patients, it was drunk by many, with very great ſucceſs. In a little time the whole Neighbourhood flock'd in to drink, and carry it away, to the great detriment of the Farmer, who had his Herbage and Graſs much dammaged.

Then the Lady *Megliorucci* (Daughter to the late *Henry Nevil* Eſqr: and proprieteſs of the Land) at her own Expences built an Arch over the place where the Spring was ſuppoſed to riſe, Dug a Trench cloſe to the VVall, and rammed it very well with ſtiff clay, which prevented all Mixture of common VVater with the Mineral after this, another ſtronger mineral VVater, ſeemed to owze out behind the Arch, which at great Labour and Expence they brought into the firſt Receiver. In their long courſe of digging up the Hill (in which they went twenty foot deep, and beyond the very Appearance of either Minerals or their VVater) In the Clay through which it's ſtrained, they found great Quantities of a particular kind of Selenites, called by them Talk, (which being poudered and taken in a little warm Ale from a dram to half an ounce is found to be a Sovereign Remedy in a moſt obſtinate Diarrhæa) and ſome Stalactites which they called the Honey Combs; being a meer petrified Congeries of calcarious and ferruginous Earth, therefore a good deobſtruent and abſorbent Medicine; ſome of this was porous like a Sponge, others ſolid Spriggs or Branches, like the Coraline Tribe. A third Earth was of a Whitiſh blew colour, exactly like light coloured Alumſtone, but very light, and when dried is exactly like Fullers Earth, and anſwers the ſame intent, it's deſtitute of Smell and Taſte. 5 and in this lie light Stalactites.

There are already hundreds of Inſtances, wherein the Stone, Gravel and Rheumatiſm, have been intirely eradicated by the moderate uſe of this Water. It intirely reſtores a loſt Stomach and Appetite to it's former Vigor and Tone, and in the Scorbutic Erruptions whether moiſt or dry, it ſcarcely ever fails; a Bottle of it drunk, gives ſeveral Stools, weak and foul Stomachs it *Vomits* at firſt; it works powerfully by *Urine*, and not ſeldom by *Sweat*. In *Bloody Urine*, *Bloody flux*, *overflowing of the Menſes*, *Spitting of Blood*, *Flurr albus* &c. It has no paraleel in this Iſland, and if drunk and uſed outwardly it performs amazing cures in *Wounds*, *Ulcers*, *Kingſevil*, &c. It affords only a Hogshead of Water in twenty four hours, which yet being carefully kept, will ſupply two hundred Drinkers dayly, the whole Seaſon. And as there are but a few caſes, in which bathing in it would be adviſable, viz. Colliquative Night Sweats, an *Atrophy* from too great Perſpiration, a general Relaxation, and a ſcrophulous habit of Body, ſo a little of the night running might be ſpared for that purpoſe; and conveyed into a Stone Baſon for the uſe; while the reſt of the Water is conveyed by a Leaden Pipe, or Spout into a ſquare Receiver, covered above, and a Braſs cock near the bottom to draw it off, and preſerve it for drinking only. It's lighter as it Springs up, and heavier afterward, is more ſucceſsful at the Spring than at Diſtance. It's encreaſed by much Rain, at which time it contains a viſible, ſenſible, percepitable Steel, not Veſtigable at other times; a ſure ſign the Ironſtone lies next under the Corn Mould; and a proof that all Mineral Waters are not injured, but bettered by ſome Rains, when the Receiver has ſtood ſome time full of this Water, it lets fall a thick jelly like matter, intolerably fœtid, called at the Alum works ſlame, which contains Vitriol, and muſt be ſeparated from their Leges before they make the Alum. The chief ingredients in this Water, are Nitre, Alum, and an inſenſible Sulphur, when the firſt has cryſtalized, and is taken out the ſecond lies in a deep greeniſh dawn at the bottom, dry, but in a moiſt Air it liquifies to Water, and takes up a very large bulk in the Glaſs. The Water at the Spout is exceeding clear, weighs 59 grs. in a Pint heavier than common Water, but carried to the Houſe it's 18 grs. heavier than before. It's the product of a vaſt Farrago of Minerals, all the Clay being a rich *Engliſh Bole*, the Stone either *Ironſtone*, which being expoſed to the Air, turns red and Corrodes; or *Limeſtone* and *Iron*; or *Alumſtone*. The Earth is all richly impregnated with Nitre, ſome Alum and Vitriol, *Talc*, *Selenites*, *Stalactitæ* &c. When the Water is lowered with Rain, it's ſtill ſtrong enough for all medical purpoſes, whither internal or external; yet it's Taſte is never diſagreeable, except drunk in two large a Quantity, that it irritate the Stomach, and cauſe vomiting. It quickly releaves a Looſeneſs or Bloody Flux, and indeed all Diſtempers from a Relaxation, palling, Congeſtion of Humours in any Part; weakneſs, ſtrains, ſores, ulcers. ſcabs, Leproſy *&c.* and lies in the cleareſt, pureſt, healthieſt, drieſt Air, with a charming proſpect every way.

Hiſ-

Hiſtory *Of Purging Waters from Marine Salt only.*

IT's not an account of all thoſe Waters in this large diſtrict we intend, this would lead to give a Hiſtory of the Brine Pits, *Wiches* and *Salt works*, but theſe not being reckoned Medicinal mineral Waters, I ſhall give a few of thoſe reputed and uſed as ſuch and firſt.

Barrowdale Well, near *Grange*, three Miles from *Keſwick* in *Cumberland*, it lies in a Level near a Moſs; it was found at firſt by Miners digging in Queſt of Ore, and ſprings out of the hard blewſtone which conſtitutes all thoſe awfull Mountains, and terrible precipices called *Fells.* being a kind of *Lapis ſciſſilis*, is pretty ſolid of a blewiſh Colour, and much of it will bear a pretty good Gloſs in poliſhing. It's a rough, ſevere purge to ſtrong Conſtitutions, heats the Body much excites a Thirſt, being a meer Brine of inland Salt, ſo ſtrong as it would well bear the Expence of a Salt work there, for ſcarce a 22d part of the German Ocean is Salt, but a 16 of this is pure Salt, and might be brought to a much richer Brine, were the freſhes made out of it, which drain into it at preſent, being a kind of pond; there grows no Graſs as far as this Water reaches. But a Gallon of *Middlewich Cheſhire* ſtrong *Brine* leaves fifty Ounces of Salt, and a Gallon of the weak *Brine* 45 and half ounce: But however harſh a vomit and Purge *Barrowdale* Well is, it wants not it's Cuſtomers and Admirers, and indeed in Dropſical, cacochymic, cachectic, diſorders; foulneſs of the Stomach, ſlipperyneſs of the Bowels from Relaxations, or much Mucus, ſome icteritious diſorders, it is of Service to ſeveral. There are ſeveral of this ſort in *Lancaſhire*, ſome weaker, others ſtronger; as one or two on *Dudden Sands*, *Minehead*, the neweſt *Cartmall* Well, below the *Carters houſe*, one beyond *Drigg*, another near *Edgermont*, *Whalney*, with ſeveral more. -------- As to the Brine Pits of *Middlewich*, they are from 10 to 35 Yards deep, and ſometimes they bore 28 or 30 Yards lower before the Brine burſts up, before which the VVorkmen hear a great Noiſe. The Diggers or Miners, firſt work through Earth, then Metal or Plaiſter, which ſplits and ſhivers like *Lapis ſciſſilis* is white like *Venice Chalk*, and lies all in Lumps; this is reckon'd a ſure ſign of Brine, tho' they find ſeveral *Strata* of it perhaps 8 or 9 Yards thick, then a blew Slate, from 2 to 3 Foot thick, and very firm without Crack or Flaw, which when pierced, the Brine riſes up with ſuch impetuoſity, that the Workmen are in danger of their Lives. The Brine is drawn up in *Leather Buckets*, and conveyed from thence into a Ciſtern, where Pipes or Spouts are laid to carry it into the Pans. Before it begins to boyl, they ſtir in a Mixture, of *Ale dregs*, and *Blood*, or beaten *Whites of Eggs*, which raiſes all the Earth and Dregs, leaves only the pure Salt. The Eggs is beſt, and makes the Salt exceeding fine beautiful and white, when it boyls they ſcum it in half an hour after that it Salts: i e: Cryſtalizes, then they rake it to a ſide, and preſently more Salt falls down, in an hour and a half more, they draw the firſt or Land Salt, then they continue ſcuming 4 or 5 more; then the *S*ea Salt falls which drawn, they ſtill keep it Simmering till the VVater is exhaled. They clean out their *Pans* . (which are of Iron) and ſcoure them from Scales or Incruſtations, which are from a fourth to half an inch thick. VVhen the Salt is taken out of the *Pan* and put into the *Barrows*, it ſtands 2 or 3 Hours before it's carried into the hot Houſe, during which time, it drains a horridly bitter Liquor, called Leech brine, which common people on occaſion, drink from 2 to 3 pints and a half for a Vomit. Each Pan of *Brine* affords 50 Buſhels of Salt, the duty of each Buſhel 3 s and 1 d there are now at work 16 Pans in *Middlewich*, each whereof exhale 9 Pans a week. The *Barrows* are of *Willow Twigs* like Bee Hives.

Caer Gyrle in *Wales*, 10 or 12 Miles from *Cheſter*, whence I had the following account, with a Stone bottle of the VVater, from the ingenious and worthy Dr. *Tho: Tylſton*, Phyſician. *There are two Wells, the farther more Salt and Brackiſh than the nearer; it's five foot nine Inches deep. The laſt is the Water commonly uſed and carried away, it's 19 and half foot deep; the oldeſt People alive can give no accouut when theſe Wells were Sunk, or upon what occaſion; but about 40 Years ago they were clear'd to the bottom. The Spring was then many Degrees Salter than it is now, they then made* *an attempt to ſet up a Salt work, but on boring through they let in a freſh Spring, which ruined their whole Deſign. Before this Attempt, the Water was diſcharged into the River, by a ſmall open Gutter, which was always very red; Pigeons reſorted to the place from all Quarters. The Water is as clear as Cryſtal, none can be finer, yet looks whitiſh in the Well. It has been much uſed of late, as a Purge, and is ſent for a great way into* Wales. *It's drunk to one or two Quarts; ſome boyl it away to a half, then drink it. It riſes up into an old Pit, which is always full of Water to the ſame Height It purges pretty well, cauſes gripings at firſt, makes them Sick at Stomach for ſome days, then gives a good Appetite. Within a Mile of it is an exceeding good Challybeate. One* Eliz: Jones *of* Mold, *having ſo great a Scurf all over her Body, that ſhe was even loathſome, drank for ſome time of the Water, about three Pints a day, and is now cured. Mr.* Jones Clark *of* Mold *was much troubled with a ſcorbutic Diſorder, but by drinking a Quart morning & evening, having firſt boyled it to two thirds, in one Week was perfectly cured. A Gentleman at* Biſhop's Caſtle Shropſhire, *drunk this Water at* Wrexham, *and was freed from a ſevere fit of the Gout. A Servant of Mr.* Middleton's *of* Wrexham *reduced to a Skeleton, was cured by drinking half a Pint at a time, thrice a day, ſeveral Children in* Scorbutic *Diſorders, and Leproſy, by drinking, and waſhing, have been reſtored, or made better.*

Leamington, riſes up about a Stone throw from the River *Leam* in *Warwickſhire*, it's very clear, purges and vomits ſtrongly being drunk by Ruſticks from two Quarts to three, It's noted for curing ſore Legs, breakings out, and Mangey Dogs. It taſtes brackiſh, Dr. *Guidot* put abundance of Nitre in it formerly, but by ſome Malevolent aſpect of the Planets, it's now all turned to marine Salt. or a Common weak brine Spring.

Plain Waters reputed Medicinal.

TO this laſt claſs we refer ſuch Waters as are ſaid to produce ſome extraordinary good Effects in the Diſeaſed, without any ſenſible and veſtigable Principles, from which we can readily and rationally deduce that ſurprizing Succeſs, ſuch is *Ichley* Water near *Bradforth* in *Yorkſhire*, *Malvern* hills in *Herefordſhire*, *Willowbridge* in *Staffordſhire*, *Malvern hills* Waters, there are two or three of them one called the *Dogwell* which with *Campeache* ſeems to be a weak Chalybeate, another the *Holy Well*, free from any Steel, and lathers well with Soap. Theſe lie on the E: ſide of *Malvern*, and come off a gravely Soil. They are noted and recommended in the *Philiſophical Tranſactions*, (No: 20 and 57) for curing *ſore Eyes*, *Tettars*, and *old Ulcers* on the *Leggs*, and for *Cancers*, therefore an ancient *Biſhop* endowed an Hoſpital at *Ledburgh*, for the Reception and Entertainment of diſtreſſed Perſons, going from *Hereford* to thoſe healing Waters.

Willowbridge Wells or cold Bath, famous for curing *Conſumptions Atrophys*, *Hectic*, and *Diſtortions*, in Young People, *lame*, *maimed*, and *rickety* miſerable Creatures, ſeveral ſurprizing Hiſtories I had from People of veracity and credit, of their Wonderful reſtoring Virtue, and from ſome Patients on the place, whom they had cured Theſe well atteſted Relations I recieved with great pleaſure, yet this Water carries no ſenſible, nor veſtigable Minerals in it, tho all this claſs weigh lighter at the Spring than afterwards, the ſame holds good in ſeveral other briſk Springs of plain common Water, which I have tried.

From the whole, (beſides what is ſaid above) I may obſerve. 1 That both plain and Purging Chalybeate, and Sulphur Waters agree in this that each has the ſame reſpective Volatile Parts, tho' all of each Sort are not equally impregnated and enriched with them. 2. That the Purging as well as plain are more efficaſious with, than without the Spirit. 3 That the Purging loſe that Spirit as intirely, and near as ſoon as the plain. 4 That theſe volatile Principles, ſeem to be no part of the Purging Principles, ſince they ſeem to operate moſtly, very near the ſame, without, as with it. 5 That therefore Purging Waters are often of very good and great ſervice, when they have loſt all theſe volatile parts, but plain Waters appear to be no further ſerviceable when theſe are gone, than as much common Water. Since this is the caſe, we ought to be determined, before we recommend the uſe of Mineral Waters, whether we expect ſucceſs from the volatile, or fixt parts or both, if the firſt they muſt be drunk inſtantly in the place where they are moſt ſaturated with the Spirit, viz at the Spring, if the laſt, they are the ſame at a Diſtance, if the 2d, as near the Spring as may be to have both. 7 For any thing that yet appears, plain and purging Waters of each Claſs, differ only 1ſt in their different Weights, the firſt *Cæteris Paribus*, being always lighter than the laſt. 2 When the volatile parts are gone, the firſt are always more inſipid, the laſt Saltiſh, or Salt. 3 The firſt bear Soap better, and will boyl with Milk, but not the laſt, but 4 The Effects of each are the ſureſt Teſt of all. 8 We find ſeveral Waters characterized by wonderful reſtorative and medicinal Virtues, in which we can neither taſte, or perceive, nor trace any uncommon Volatile, or fixt Mineral Principles, from which we can rationally deduce thoſe Effects. Here let us firſt ſtrictly and judiciouſly examine the Earths and Minerals through which it's Strained, before it reach the Day. 2 Look out for other Diſſolvents, Separaters, and Precipitators, which may fix volatile Principles, till they be brought under our Senſes and Judgment to be examined. Ex: Gr: ſome things precipitate or are precipitated by one Article, or ſort of Matter, ſome by another. 3 Let us ſeriouſly reflect upon and examine the Diſeaſe, or Diſeaſes, in which ſuch Waters are reckoned ſpecifics, with their remote & proximate cauſes, and ſee how far, or whether or not, theſe Effects may not be accounted for from the like uſe of plain ſimple Water. 9 But in Waters truely Medicinal, whether we can account for their Effects from their inveſtigated Principles, but eſpecially if we cannot, let us diligently enquire, by what manner or by what uſe, they have had their ſucceſs moſt ſurely, ſafely, and expeditiouſly; whether by drinking, bathing, pumping, fomenting, Lotion &c. If the firſt, whether drunk in a large Quantity, or ſmall; warm or cold, in bed, or out of it; with, or without, Exerciſe; whether thrown on the Stomach, Bowels, Kidneys or Skin, to work by vomiting, Purging, urine, or ſweating, whether they were beſt drunk alone or with other mixtures, what ſeaſon of the Year, or time of the day, their uſe is moſt adviſable, what kind of Diet, preparatives, or Correctors, are moſt ſuitable to them, how long time they are to be uſed, if their inward and outward uſes are to be carried on together, or the ſame Day. 10 Different Waters equally impregnated with a Mineral Spirit, do neverthelefs weigh heavier or lighter as they have more or leſs fixt parts. 11 From the nearneſs of ſeveral of thoſe VVaters, and yet their different Qualities or various impregnation, with the ſame Minerals, ſee 1 That a more near or remote Diſtance from the impregnating Minerals, may make a great difference in the ſame ſort of Waters, as they riſe up. 2 That very different Minerals often lye at a very ſmall diſtance from one another.

FINIS PARTIS PRIMÆ.

PART. II.

PART II.

The Experimental HISTORY.

Of the Mineral Waters.

SUPPOSING I am ſtill at the Spring, having informed my ſelf of what belongs to the natural Hiſtory, as much as I poſſibly can; and as much of the medical, from judicious faithful vouchers, as is neceſſary to our preſent purpoſe. Before we advance one ſtep to the experimental part, it will be requiſite to take ſome precautions, to prevent Blunders and being deceived. As 1 let the Well be cleaned out the night before, that your Water may not only be clear, but that you may have it in it's greateſt Perfection. 2 If any other Springs run into, or mix with the Water, let them be made out when the VVell is cleaned, before the Examination is begun; otherwiſe expect to be deceived as to the quantity or proportion of principles impregnating the VVater. 3 If the VVell is ſupplied by ſundry Springs, let them be parted and examined ſeparately, to find if there is any difference, either as to the Quantity or Quality of their principles. 4 Nor is it proper to make the Examination in a very rainy Seaſon, or during Land Floods, which may affect the Springs, if ſuperficial, for then we can neither judge truely of their colour, weight, ſmell, taſte or ſtrength. 5 Nor ſhould one chooſe to do it at any ſeaſon indifferently, when they may avoid it, for Summer and Harveſt eſpecially, are better than VVinter, or early in the Spring, for the Springs are generally fuller and higher, than in the firſt, therefore weaker. Morning is better than Noon or Night, eſpecially where the VVater is much expoſed to the *Sun.* 6 It ſhould be in a healthy ſtate of the examiner, when all his ſenſes are free, natural, quick and acute It's an improper work, for one that has a cold or catarrh, or intemperate, or whatever may impair, vitiate or deſtroy the Taſte or Smell, for theſe muſt aſſiſt in making a right judgment. 7 The Water muſt be examined inſtantly after it's taken up, without carrying to any Diſtance, or ſtanding, tho never ſo cloſe cork'd, leſt the whole, or ſome part of the mineral Spirit be loſt. 8 The light in which they are examined, ſhould either be open Air, or a large Window of Good Glaſs, free from obſtructions before it to leſſen the Light, and beware of objects any where near the Glaſſes, leſt they miſlead the Judgment, in viewing the Colours of the Water, as red, green, yellow, blew &c: for the leaſt Reflection of theſe upon the Glaſſes, may be apt to deceive. 9 Inuſing the Hydroſtaric Balance avoid all Air of Wind, let not the Glaſs Ball touch the ſides of the Veſſel wherein the Water is weighed, and ſee that all the Braſs tackle be clean and bright. 10 The Hydrometer muſt be exactly poiſed in diſtilled, ſofteſt common, or Rain Water, one of Ivory is preferable to a Glaſs one, provided it's Screws be good and ſecure. 11 The Thermometer muſt be a ſhort portable one, with good *S*pirits, a large Ball ſuſceptible of the leaſt degrees of Heat and Cold: The Diviſions ſmall and diſtinct, twenty to an Inch, they may be contrived more extenſively uſefull, ſafer for carriage, and near as exact as *Farrenheights* with Mercury. 12 A long Cylindric hollow Tube will alſo be uſefull, with the upper part marked carefully at ſmall interſtices, to find whether, or how much, the Water ſubſides on loſing it's mineral *S*pirit. 13 All the Materials intended to be uſed experimentally in the examination of Mineral Waters for a whole *S*eaſon or ſeveral Circuits ſhould be got in at the ſame time, that one may not be obliged to uſe ſeveral and perhaps different Sorts. 14 All-aqueous Tinctures ſhould be drawn in diſtilled Water, but after long Tryal I prefer the Subſtance to Tinctures, for I could not always have diſtilled Water in every place, and different ſorts of Water, may alter or marr ſeveral Experiments, from ſundry ſorts of Salts or Earths in it. 15 All the Glaſſes uſed muſt be clean, and of the ſame ſhape, ſize and kind, viz of Cryſtals, for Glaſſes of different Shapes, Sorts, and Sizes, vary the colours much. 16 Let all the Glaſſes be filled to the ſame height, for different Allitudes with the ſame ingredients will vary the Colour. 17 The quantity of each Article to every Water, ſhould be exactly weigh'd or meaſured. 18 The Glaſſes with the Mixtures ſhould all ſtand the ſame time with every ſundry Water. 19 The Attention and Eye of the Examiner muſt be very intent and quick, to obſerve the ſudden Tranſitions of Colours & Shades, that ſome Waters go through in a Moment.

In the following or firſt Table.

N. B. Yell: ſtands for Yellow, or Yellowiſh.
L: for Light, or Lighter.
H: For Heavier.
D: For Deep.
Curd: For Curdled, or Curdling.
Sedt: or Sedimt: For Sediment.
P: For Purple, or Purpliſh.
Op: For Opac.
W: For White.
Var: For Variegated.
Maz: For Mazarine Colour.
B: For Blackiſh, or for Blew, or Blewiſh.
Dk: For Dark.
Br: For Browniſh, or Brown.
G: For Green, or Graſs Green,

Place	Month	Year	Solut. arg.	Spt Salis	Syr Viola.	Sp: C. C:
Bournley	July 27	1733	Clear Pearl Deep Purpl	o	Blew D: green	W: Curd *large Sıd:*
Emmet	July 28	1733	Pearl	o	D: gree	o
Cambridge	Octr.	1738	Pearl Purpl	o	B. d. *gree*	W: Curd
Carlton	Septr	1738	Pearl Purple	o	D. green	Whiteiſt
Wellingburrow	Sept 29	1739	Pearl Purple	Bluiſh	green	Pearl
Ditto	July 28	1738	*Light Pearl*		green	W: Curd
Northampton Do.	Sept 30 Juy 30	1733 1738	Pearl	Bluiſh ſett'd	green	*Yellowiſh* W: Curd
Ilmington	Oct 2d	1733	White	Pearliſh	green	Pearl
Coventry	Oct	1738	Pearl Pink	o	G. green	Pearl
Newnham Regiſs	1733 July	1735 1738	Pearl	o	green	White
Malvern Doggwell	Sept 1	1738	Pearl	o	green	o
Benthal	ept	1738	o	o	L: green	Pearl
Birmingham	Sept 5	1738	*Pearl D: Pur*	o	green	o
Duddley	ept 4	1738	White	o	D. green	Deep G:
Cannock	Sept 1	1738	Pearl	o	green	Pearl
Litchfield	Aug 30	1738	Pearl	o	greeneſt	o
Shiphnal	Sept 6	1738	P Pearl	o	G. gree	greeniſh
Dinnington	Sept 9	1738	Pearl	o	B. gree	Pearl W:
Moretonlee,	Sept 7	1738		o		

Oil Tartar	Galls	Sugar *Lead*	*Sublimat*	*Logwood:*	Sumach	Weight
W: Curd Sedt.	Purple Sediment	W: Sedim:	Whitiſh	*Mazarine*	Pure	
o	Deep Purple	Whitiſh	Pearl	Black	Purpliſh	
Pearl,	Muddy green	W: Sedim:	clear W *vari ſcum*	Red	Muddy	
B: Wool	D. Purple	Whitiſh		*Mazarine*		gr. 22 L
Whitiſh	Purple	White	o	B: Curd	*Browniſh*	
S: Sedim	Claret	White C:		Red		gr. 16 L
Pearl W Sediment	Purple black Curdied	White Cr:	Bluiſh	B: Maz:	D: Red	gr. 14 L
White	Purple	White Cr.		D: Maz:	R: B:	
Pearl Curd	Red	White Cr:	o	L: D. M	P: *Pin*	gr. 21 L
	Pale Pink,	White Cr:	o	Purple	Muddy	gr 22 L.
						gr. 22 L
o	Brown	Bluiſh	o	Violet	brown	gr. 14 L
Pearl	Pale Red	Whitiſh	o	D: *Purple*	Pink	gr 36 L
o	D: Pink	Pearl	o	*Mazarin*	P: *Purp:*	gr. 12 L
G: Sedim	Purple	White Cr	o	D Maz	D: *Pur.*	gr. 8 L.
Pearl	D: Clat :C :	White Cr:	o	Violet	Red	
P. Pearl	Claret	White Cr:	? White	*Mazarin*	Rediſh	gr. 10 L
Sediment	D Purple *Opa*	White Sed	W: Cr:	Max *opa*	D: *Pur*	
White	D: Pink	White	o	Mar		
	D: Pink			*Mazarin*		gr. 14 L

Place	Month	Year	Solut. a g	Spt. Sal	Lyr. Viol.	Spt. C. C.
Knowſley	Novbr: 29 April 18	1732 1734	Pearl W	o	blue green	o
preſcot,	April 19	1734	pearl	o	green	o
Latham,	Novbr: 30 April 19	1732 1734	pearl	o	green	o
W: carr,	Decemr: 2	1732	pearl	o	greeniſh	Yellowiſh
Lancaſter.	Decemr: 2	1732	pearl	o	green	Yellowiſh W.
Wigan	Decemr:	1732	W. Sedt.	o	green	Yell. Sediment
Lunt:	April 16	1734				
Halm *green*	April	1734	Whitiſh	o	greeniſh	pearl
Moſs Houſ	April 16	1734			green	
Millarsſpaw Stockport	April 24	1734	White	o		Curd.
Congleton	Octr: 20	1738	pearl	o	L. green	Browniſh
Brockehol Nether	Auguſt 9	1736	pearl	o	green	o
Croſsfell	June 15	1738	L. pearl	o	bluiſh	o
Carſlile	June 16	738	pearl	o	green	
Wigton	June 17	1738	pearl	o	L, green	
Binley	Augt: 1	1731	pearl			
Do;	July 28	1738	pearl pur			Whitiſh
Aſtrope	July 29	738	pearl pur.	o	D. green	Whitiſh Led White

Oil Tartar	Galls	Sugr. Lead	Sublimate	Logwood	Sumach	Weight
pearl Sedt	pur. Sedt	White	Whitiſh	Mazarine	pink,	grs 22 L
pearl	purpl	L. White	o	Mazarine		grs. 17 L
White	pur. Sed	White Sed	o	Mazarine	pink	grs. 17 L
	pur. Curd	White	o	Mazarine		
White	Crimſon	Whiteſt,	Sky blue	Opac blue	pink	
White	Crimſon	Whitiſh	o	D. blue	o	
	purple	White	o	Mazarine		grs. 8 L
pearl	Crimſon	Milk W.	o	B. blue		
Whitiſh	clear red		White	Blackiſh		grs. 22 L
Yell. Sedt.	pur. *black*	White Sed,	pale O-range	Blackiſh Black Sed.		
pearl	pale pink	D. White,	pearl	purple	pink	grs. 16 L
pearl	D. red	Thick W,	o	Mazarine.		
pearl	D. pur.			D. blue	purple	grs. 26 L
W. Curd	purple	W. Curd	o	Mazarine.	purple	
White	Claret	White	o	Violet	brown	
Whitiſh White	pink L. pink	White,	o	D. red		grs. 6 L
White Sed.	pink pur.	White Curd	o	Red Maz.	pale pink	

place

Darby	October 5	1738	pearl Led.	o	D. Green,	Pearl
Oxford New Well,	Octr. 11	1738	pearl pur.	o	D. Green	Pearl
puckwell	Feb. 2	1739	purple *deep*	o	Greeniſh	o
Bloxham	Feb. 24	1739	pale purple	o	Greeniſh	o
Hooknorton,	Feb. 26	1739	pale pearl	o	Greeniſh	o
Blackmoor	March 10	1739	pale purple	o	Green	o
Barrowlais	March 3	1739	pale pearl	o	Graſs *green*	o
Wroxton	March 5	1739	White	o	Graſs *green*	o
Worton	March 9	1739	pale pearl	o	Green	o

Claſs Second of Purging Chalybeats.

Cliff	Sept. 28	1733	Pearl Pur	Purpliſh	D. Green	Whitiſh Sed.
Tarlton	April 20	1734	Pearl pur	o	Green	
Kirby thewr upper Do nether	June 15	1738	Clear pur	o	D. Green	Whitiſh Sed.
Cartmall	Auguſt 7	1736	White Sdt	Whitiſh	green	White
weaſherſlack	Auguſt 8	1736	White Sdt	Whitiſh	D. green	Yellowiſh
Stannger	June 20	1738	White Sdt	o	D. green	White

White

White Sedt.	D. Pink S.	Pearl	Pearl	Purple	pink	gr 7 l
White	Pink.	Milk	L. Pearl	Purple	B. Red	gr 7 l
o	o	Carnation	White Sediment	pale pearl	Mazarine, then Red,	pink
o	o	o *browniſh*	Milk W. Sedimt	pale pearl,	purple Atrament	p B.
o	o	R. brown	Milk W. Sedimt	pearl	Violet Ambr.	o
o	o	R. brown	Milk Sedt.	o	Violet red	o
o	o	Carnation	*Dove colour*	pearl	Violet Scarlet	Car.
o	o	Caurelian	White gr Sediment	o	D. purple black	Car.
o	o	Reddiſh	M. Sedimt	o	purple	Br.

Claſs Second of Purging Chalybeats.

White Sedt.	purple Sedt	pearl Sedt.	W. Sedt.	Opac red	Brown R.	gr 2 h
White Sedt	pink Sedt.	White	o	D. blue		gr. 7 l
White Sedt.	pink purple	White	o	Red pur,	pink Maz	
White Sedt.	Clear	Milk	o	brown	Muddy	gr 30 *b*
pearl Sedt.	purple Sed	Milk Sedt	Whitiſh,	pur, Maz	peas blo.	gr 66 *b*
great Sedt.	pur. R. Sed.		o	Maz Sedt	pur. R. S	

Hartle

Place	Month	Year	Solut. arg.	Spt. Salis	Syr. Viol	Spt. C. C.
Hartlepool	Apr. 11	1738	White Sed	o	Green,	Whitiſh

Claſs Third of plain and Purging Sulphur Waters.

Place	Month	Year	Solut. arg.	Spt. Salis	Syr. Viol	Spt. C. C.
Durham	April 10	1738	Blackiſh	o	Green	Pearl
Congleton	Octr 20	1738	Clayie Sed	o	L. Green	Brandy,
Wa drew	June 16	1738	D. Brown	o	Green	
Drigwell	June 20	1738	pa. Pearl	o	Green	o
Willen hall	Sept. 3	1738	Whitiſh pu	o	D. Green	o
Cod alwood	Sept. 6	1738	pale Pearl	o	Greeniſh	o
Loansburrow	July 14	1733	pink Red,	o	o	White
Cunley Houſe	July 27	1733	Brown Sed	o	Green	o
Whaley	July 27	1733	pearl	o	Green	
Clythero	July 27	1733	Blackiſh,	o	Green	Whitiſh
Gunfit	Janr. 30	1733	Whey	o	Greeniſh	
Glaſſelhall	Janr. 31	1733	Whey	o	Whitiſh G.	
Moffatt	Augt. 15	1730	Blackiſh Sed	o	Green,	o
Deddington	Octr. 11	1738	D. pearl	o	blue G.	Pearl
Gainsburgh	July 25	1738	pale pearl	o	D. Green,	White
Maudſley	April 20	1734	Bl. Br. Sed	White,	Blue	White
Inglewhite	Decr. 6	1732	W. and Gre.	o	Green	L, Yellow White

Oil Tart	Gall,	Sugr. Lead	Sublimate	Logwood,	Sumach	Weight,
White S.	Pink	pale Maz	Brown			

Claſs Third of plain and Purging Sulphur Waters.

Dk. B.	Muddy	Blackiſh	pearl VV. Sediment	o	Yellowiſh	grs. 14 L.
Browniſh	Muddy	*Clayie* S.	pearl			
	o	Dark B.	o	Cherry R	o	grs. 17 L.
White	Purple	D. B.	o	Violet	Red	
White S.	o	Whitiſh	o	purple	o	
p. Pearl,	o	Whey	o	Amber		gr. 8 L.
White,	Muddy	White S	o	Scarlet,		gr. 24 L.
o	Muddy	Brown S	VV. Sdt.	plae Red		equal
	Yellow pale Pk	White	o	Brown		gr. 22 L.
the ſame	Muddy	VV. S.	VVhitiſh	Blood R		
Yellowiſh	Muddy	pearl	o	Crimſon.		
Yellowiſh	Muddy	Whitiſh	Bluiſh	purple		
Whitiſh	Muddy	Blackiſh	pearl	Orange,		
Pearl Cd.	L. Pink	Browniſh	o	purple	Brown	grs. 8 L.
large Sdt	pink	VV. Sdt	o	blood Red	R. Brown.	grs. 14 L.
Milk	Muddy	Bl. Br. S	VVhite	Ambet,	Muddy	grs. 120 H.
Do.	purple	pearl	o	B. blue		

Kingham Bog	April 18	1739	Curdled Purple.	o	Greeniſh	o
Leak bog	May 2d.	1739	Curdle White,	o	Greeniſh	o
Chadlington	May 4th	1739	*Lead lyt* b	o	*Willow* G	o

Claſs Fourth Nitro, Calcarious Purging Waters.

Cheltenham,	October	1738	Milky	Sparkld much,	Green	Pearl
Comnor,	Octr. 10	1738	pearl pur	o	Green	L. pearl,
Cliffton,	Octr. 11	1738	pearl pur.	o	Graſs G.	o
Moreton See Pump,	Sept. 7	1738	White,	o	Green	pearl,

Claſs Fifth Nitro, Alluminous Purging Waters.

Holt in Lieceſterſhire	Octr. 15	1738	pearl Blue	o	Blue	Light Pearl

Claſs Sixth Purging Waters with Marine Salt only.

Barrowdale	June 19	1738	White Sedt.	o	Green	
Caergyrle	October	1738	White Sedt.	o	Green	
Leamenton,	Auguſt	1735	Muddy C.			White

I choſe to bring the preceeding *Experiments* by *Coloration at the Spring*. into one Table, that the difference may be ſeen at one view, and to each *Proceſs* I have prefixed the *Day Month* and *Year*, that upon after *Tryals* it may be found, whether the Waters *get*, *loſe*, or keep at a *ſtand* in their *Strength* and *Principles*. But before I proceed to make Reflections, it's neceſſary, to intimate in the general, that if we mix filtred *Tincture of Galls* with diſtilled Water, or *Spirit of Hartshorn* or *Oyl of Tartar*, or *Tincture of Sumach* or Soluti-

o	Muddy Green	Curdled White	o	pale pur. amber	pale Y,	
o	Muddy,	Curdled VV: Sediment,	o	Violet B. R. *amber*	o	
o	Muddy,	Milk White	o	Pink,	o	

Claſs Fourth Nitro, Calcarious Purging Waters,

White Sedt,	Muddy G.	Milk	pearl a G. pellicle	Claret Amber,	Green	grs. 24 H. 63 H:
White Sedt,	Yellow,	Milky	Pearl	D, Red	Brown	grs. 24 H.
Clayie Sedt,		Milky,	Pearl	L pur. S R. port,	o	grs. 10 H
White Sedt,		Milky S	o	Scarlet,	Clayie	grs. 10 H.

Claſs Fifth Nitro Aluminous Purging Waters.

Pearl Sedt	Blueiſh	Milk	o	Red pur.	brown,	grs. 42 H.

Claſs Sixth Purging Waters with Marine Salt only.

Whitiſh	o	White	Pearl	L. Red.	Muddy		
Whitiſh	o	VVhite	Pearl	L. Red,	Muddy		
Do	Muddy		o				grs. 10 H:

on of Sugar of Lead, or of *Sublimate*, or *Spirit of Salt*, into diſtilled Water, they neither change colour, nor does a precipitation of any parts enſue, becauſe there are neither Earth nor Salts in the Water to cauſe them. Pouder or Tincture of *Campechey* gives a bright reddiſh Colour according to the quantity put into the Water, *Syrup* of *Violets* tenges diſtilled Water of a very pale blue. Theſe Articles are far ſhort of the Number I often uſed, but by long Experience, theſe, if not fewer, anſwered all the intentions of a far greater Number. 1 Then as to *Solution* of *Silver*, tho' by it all Waters (except diſtilled) loſt their Clearneſs and Tranſparency, yet are they not all tinged of the ſame Colour, nor affected after the ſame manner with it for ſome are of a very pale pearl, ſome pearl, ſome whitiſh, ſome white, ſome of a ſack, others of a ſtrong Beer, ſome of a clayie, ſome of a pink, ſome of a red, ſome of a purple, ſome of a black Colour, others jet black, ſome precipitate a Wooly light, others a ponderous ſediment to the bottom; or throw an incruſtation on the ſides of the Glaſs, the Water at top, or in the middle, being clear, ſome change Colour immediately with it, others not till after ſome Hours ſtanding, ſome are of one Colour at firſt, then of another afterwards, ſome precipitate inſtantly, others not under ſome Hours ſtanding. The Reaſons of which differences I ſhall fully explain afterwards. 2 We ſee the ſtrongeſt *Acid Spirits*, or Oyl of Vitriol cauſe a Fermentation in moſt Waters, tho' not in all. Many they affect not at all, with ſome they are blueiſh, pearliſh, pearl, or whitiſh &c. which we ſhall account for when we have given the fixt parts. 3 *Some* Waters with *Syrup* of *Violets* are firſt blueiſh, then greeniſh, green, or a deep green, and a very few alter not. 4 *Spirit* of *Hartshorn* dropt into ſome Waters, the Mixtures changed not, others were Pearl, Whitiſh, White, Yellowiſh, Greeniſh, ſome after ſtanding Curdled, had a Wooly Sediment, Cloud in the middle, or a Fleece at top, the reſt clear, the Reaſons whereof we ſhall ſoon ſee. 5 *Oyl* of *Tartar*, as the laſt was a volatile, ſo this is a fixt Alcali, therefore we may expect the Phenomena from both to be pretty much the ſame, only this ſometimes affects a Water that the other does not, and makes all of them Whiter, more opac, affords a larger Separation, Curdling precipitation or cloud; the Water clear between, below or above we repoured off. The ſediment of ſeveral of theſe Waters was collected ſeparately, dried in a Glaſs, on a Sand Heat, and found to be only meer White Earth, not Nitre (as I've imagined in my firſt Volume) or any other Salt. On this was dropt ſome acid Spirit, it fermented ſtrongly, hiſſed, bubbled and ſmoaked. The Whiter any Water was, with the ſame No. of drops of Oyl, the ſooner it Curdled, the larger the Sediment and the more Earth, ſo that ſpirit of Hartshorn and Oyl of Tartar only precipitated Earth, or an Earthy Matter, 6 *Sugar of Lead*, it's only uſe in the Tryal of Mineral Waters, is, by the Weight of the groſſer parts, to carry down with them a part of the Earth, which is always blueiſh, pearl coloured or white, the whiter the Mixture, the larger the Sediment, whereof the more does the Water contain, and of all Earths it precipitates moſt of the calcarious 7 *Sublimate* was chiefly uſed in Complyance with the Honorable Mr. Boyle, and the royal Academy, who ſeem to lay great ſtreſs upon it, but whoever ſurveys the preceeding table will find no great matter to boaſt of it, 8 *Sumach* is of the ſame Nature with *Galls*, *Acorns*, *Pomgranate Bark* and other Aſtringents, but weaker, ſlower, and leſs certain. 9 Now come we to *Galls*, whoſe *Pouder*, *Tincture* or *Gum*, put into any Water that Taſtes or Smels of *Iron*, is followed by a Diminution, or loſs of Tranſparency, or with a Curdling and falling to the bottom of a reddiſh Pouder, or Flakes, from which the pure ſupernatant Liquor being poured off, the ſediment only preſerved ſeparately, and dried, from ſeveral ſuch Waters, then weighed and compared, it's eaſy to find out the different quantities of thoſe precipitated principles, impregnating any chalybeat Water. But the colours with which the ſame Galls, affect chalybeate Waters, tho' the exact quantities of both be carefully obſerved and kept to, are various, as a deep ale *Brown*, a *pale Pink*, *Pink*, *deep Pink*, *pale Claret*, *deep Claret*, *Purple*, *Violet*, *Peas bloom*, *Mazarine*, *Blue*, *Black*, &c. The Mixtures differ alſo in Denſity, ſome being quite tranſparent, ſo as plainly to diſcern and diſtinguiſh objects behind them, others are thick and opac, ſo as to exclude all Rays of Light penetrating any depth, moſt after they have curdled and precipitated, have a clear fine ſweet Liquor above without either ſmel or taſte of *Iron*, ſome that were of an opac jet black at firſt, when they have Curdled and Precipitated, have ſtill a beautifull, tranſparent, purple Liquor above, which both ſmels & taſtes ſtrong of Iron. I ſhall account for thoſe different and various Appearances, in reflecting on the following Tables. As to their different Colours and Conſiſtences, theſe we ſhall after ſee, wholly depend upon and indicate the Quantity of *Iron* and *Vitriol*, with which ſundry Waters are impregnated, and ſometimes the kind of Earth mixt with the Vitriol. Ex. gr. when the Water with *Galls* is a peas bloom, the *precipitation* will be large, and the dried *Sediment* without *Galls* will be Milk White, or a light Gray, and very alcaline from a Load of calcarious Earth mixt with the Water, not that *Galls* precipitate that Earth, but the Rubric being precipitated entangles, collects,

collects; and carries down the other with it, which being Whiter, hence a light gray Colour, when the Water is neither pink Red, nor Purple, but of a true Ink colour, it's overcharged with Iron and Vitriol, has a rough, harſh Taſte, not ſo agreeable to the Stomach neither ſo light, nor goes ſo quickly off, when the Water is of a deep blue, without red or purple, and ſcarce tranſparent, it's moſtly a ſign of fixt Vitriol. A Chalybeat with Galls, of a brown Colour is a very coarſe, heavy, unpleaſant Water. Theſe of a pale pink, pink, arterial blood Red, burgundy colour, or of a pink champaign, are all leſs impregnated with Steel, but what they have, is exceedingly volatile, of a briſk, pungent, gratefull Taſte, go immediately of the Stomach, are quickly and powerfully diuretic, exhilerate much, give a keen Appetite, but they muſt be drunk at the Spring juſt taken up, and in large quantities, as three Quarts to a moderate forenoon doſe. The ſooner any Water curdles the larger it's ſediment with *Galls*, the larger the Sediment, the more Ochre, Iron or Vitriol it contains. --------- *Campechey* or *Logwood* is of ſpecial ſervice to our purpoſe, but it muſt be uſed in Pouder not Tincture, for it quickly loſes it's colour. It tinges either black, blue, violet, Mazarine, Pink, light or deep red, amber or orange. It ſtrikes the firſt three Colours with Chalybeates, where *Galls* turn the Water black, blue, Purple &c. The 4th is with weak Chalybeates, and here it exceeds *Galls* and may be depended upon with greater certainty for where the laſt only turn a Water Muddy or Clayie, without the leaſt indication of *Steel*. The firſt is a faint Violet, or light Mazarine, at the ſame time the Water Curdles Soap and taſtes hard. It's of an arterial or venal Blood colour with Nitrous Waters. Chiefly brown, Amber or Orange with Sulphureous Waters.

Whoever attentively reflects on the preceeding Table, will ſee that tho' *Sugar of Lead*, by it's Weight and Groſſneſs precipitates ſome of any kind of Earth, out of Waters, yet *Spirit of Hartshorn*, but eſpecially *Oyl of Tartar*, affect and precipitate chiefly very alcaline or calcarious Earth, or a ſulphureous one, the ſediment generally White, the conſiſtence ſoft and floccy like Down, and ſometimes an Incruſtation. A few Waters we ſee turn them Yellow, Yellowiſh or Greeniſh, but this we have only obſerved in Waters that waſh coarſe Coal or fine black Shale very near the Day; Such Water will ſtrike

Purple with *Galls*, after it has boyled ſeveral Minutes ſo much have they of *Vitriol* in them, and ſo near does it approach a fixt State *Galls* not only ſerve to diſcover volatile or fixt *Iron*, *Steel*, *or Vitriol* in a Water, but if inſtead of turning Purple, black or red, the Water turns of a deep Green after two or three days ſtanding, it's a great preſumption, if not a certain Indication, that it contains Nitre and calcarious Earth. *Solution of Silver*, not only ſerves to diſcover the impregnation of Water with *Marine Salt*, by the ſudden precipitation of the *Silver*. But if after three or four hours ſtanding, the Silver is not precipitated, but the Mixture changes from Pearl or White, to purple, Violet or pink, it's moſtly a ſign of Nitre in that Water, but if the Silver is precipitated, and the Water afterwards turns purple, it contains both Salts, and the quantity of the Salts impregnating, ſhall be diſcovered. 1 From the ſudden or ſlow precipitation of the Silver. 2 From the lightneſs or depth of the Purple Colour. *Metallic Solutions* ſtand alſo in another good ſtead, for by them we diſcover to a certainty, the quantity of Sulphur mixt with any Mineral Water, for on pouring it on them they inſtantly turn jet black, black, brown, clayie, or whey colour, as the Water has more or leſs *Sulphur*, of this I could not otherwiſe be ſure, as I have not yet after all my Study and ſearch for it, been ſo happy as to diſcover a *Precipitator* or fixer of it, nor can I allow my ſelf to be an infallible judge in this any more than in determining the exact degree of the temperature of the Air without a Thermometer. For, to ſmel and taſte, *Codsalwood* ſeems to have near as much Sulphur as *Harrigate Broughton*, *Crickle* &c, but by theſe it's found not to contain paſt one 15th in the firſt, nor above a tenth of the laſt two. *Spirit of Salt* is a little of the Nature of *Solution of Silver*, or *Aq. fort.* for with it Waters loaded with *Marine Salt* are Pearl, Whitiſh, or White as *Weatherſtack Cartmal Maudſley*, but with ſome particular Waters impregnated with *Nitre*, it's blueiſh, purpliſh or purple, as *Aſtrope Wellingburrow* &c But to make this Experiment fairly, the Mixtures ſhould ſtand many Hours. *Sublimate* has afforded us the leaſt Satisfaction, being able to draw no certain obſervations from it. Beſides theſe I formerly uſed a great many more Articles, as *Tincture* of *Nephritic Wood*, *Red Wood*, *Saſſafras*, Flowers of *Turnſole*, *Roſes Clove Gilliflower*, *Alkanet* root, *Brandy*, *Rheniſh Wine*, *Liquid Laudanum.* &c. But being able to gather no Information from them I dropt them only one more afforded abundance of pleaſure, which I give in it's place, The quantity or degree of volatile Principles in Mineral Waters of any kind; is diſcovered, Firſt by the *Hydroſtatic Balance*, by weighing them at the Spring immediately as they riſe up and then again after they have ſtood ſome Hours, and where the difference in the Weight was greateſt, ſo was the Mineral ſpirit at taking up. 2 by the long *Cylindric Tube* mentioned before, for the Tube being filled to the Top, the more it ſubſides, the more ſpirit was in the Water. 3 From their greater Briskneſs, and ſpirituouſneſs to the Taſte. 4 From their greater Lightneſs on the Stomach, and quicker paſſage out of the Body. 5 From their more or leſs exhilerating, or intoxicating the Drinkers. But this is a perpetual Rule, the lighteſt have the moſt volatile parts *Cœteris Paribus*; the more volatile the ſooner gone, and the more incapable of carriage & keeping. The lighteſt plain Chalybeates in the preceeding Table are *Aſtrope*, *Benthal*, which exceeds all in that County, *Croſsfell*, *Knowſley*, *Carlton*, *Moſs houſe*, nether *Brockhole*. The lighteſt and beſt Sulphur Waters are, *Moffat*, *Wardrew*, *Codſalwood* and *Durham*.

Tho *Fallopius* was the firſt that introduced the uſe of *Galls* and other *Aſtringents* into the *Examination* of Mineral VVaters, yet it does not appear that he was apprized of the full extent of their ſervice in this ſubject, for when he obſerved a VVater turn Red or Purple and let fall a ſmall Sediment with Galls, he went no further, but one would wonder he ſhould not be led to enquire, whether they equally tinged all chalybeates of the ſame colour, in the ſame degree, and of the ſame Tranſparency or opacity, in the like time, whether all curdled and let fall a Sediment in the ſame quantity, of what that Sediment conſiſted, whether he found the ſame Principles in the Sediment of VVaters evaporated with *Galls* and without them; how long time Chalybeates retained this property, or whether they loſt it, or if all loſt it equally in the ſame time, of how many parts or principles *Galls* conſiſted, and might be ſeparated into, if this tinging property was peculiar to one or two, or common to all, if all *Galls* would equally anſwer the behove, if all their preparations were equally alike, or which was the moſt ſure and commodious? Theſe ſeem ſuch natural Conſequences of the firſt grand and uſeful Diſcovery, that conſidering the Multitude of Treatiſes, and Eſſays, wrote on Mineral

VVaters, ſince his time, to the preſent, and how many contentions, and fine Spun Theories have been formed about the loſs, or change of their volatile parts, it's a wonder that none has hitherto undertaken the *Reſolution* of theſe *Queries*, which might have gone a great way to ſatisfy Men's Reaſon, reſolve their doubts, to convince their Minds by fixing the volatile parts, and ſo bringing them under the Tryal & Examination of their ſenſes as well as of their judgment. We ſhall ſee immediately that this would have rendred not only the Knowledge but the Benefit of thoſe Waters of more general uſe and ſervice, by accomodating them more particularly to different Caſes, Conſtitutions Diſeaſes &c. In order therefore to reſolving thoſe *Queſtions*, and making theſe Diſcoveries I ſhall begin with Galls, they being equal to all the other Aſtringents in this caſe, and the only *Precipitator* I know off, that may be depended upon with Certainty.

Firſt I took diſtill'd Water three Ounces and one Fourth, fine freſh pouder'd *Galls* forty Grains, mixt, and ſet them on a Sand heat till all the VVater was exhaled, there remained of Sediment Thirty Seven Grains. 2 I took the ſame quantity of diſtilled VVater, and *Galls* that had been thrown about looſe in Pouder above two Years, mix'd them and exhaled on a Sand Heat, Thirty Seven Grains of Sediment remained. --------- 3 I took boyling hot diſtill'd VVater half a pound, poudered *Galls* one dram, or Sixty Grains, mixt, and let them ſtand all Night, then poured off & filtred the clear, dried what remained in the Cup, and it weighed Twenty four Grains, ſet the filtred Liquor in a Glaſs upon a Sand heat, it left Thirty three Grains of a fine dark brown clear tranſparent Gum in a cake, exactly like Stibium. --------- 4 The laſt *Galls* and VVater being mixt boyling hot, I laid a clean large *China Saucer* Shelving over it, like a cold ſtill, ſo as the Drops condenſed from the riſing Steam, ſhould fall directly into a Solution of *Sal Martis*, ſet under the *Saucer*, yet the drops left the ſolution clear, and not at all tinctured, the ſame it was, when poudered freſh Galls and VVater were diſtilled, the diſtilled VVater changed not the colour of Solution of *Salt of Steel.* ------- 5 I took poudered *Galls* Grains Forty, diſtilled VVater ſix Ounces mixt, and put them in a clean braſs skillet, quickly exhaled the VVater away over a ſharp fire, there remained only Thirty two Grains of blackiſh, ſparkling and Gummy Sediment. --------- 6 ſome of the Sediments of Experiments 1 2 5 the Gum of thoſe that were filtred and exhaled, and the groſs earthy parts left in the filtring cup, a Grain of each of them, ſeparately put into diſtilled VVater equal Quantities, wherein a Grain a piece of Salt of Vitriol had been firſt diſſolved, all of them ſtruck the ſame opac fine blue, as at firſt when freſh poudered. -------- 7 Took common VVater boyling hot twelve Ounces freſh, poudered Galls forty Grains, mixt and let ſtand all night with a ſaucer laid Shelving over it as before, and a ſolution of Sal Martis under the ſaucer, next day the ſolution was not tinctured, but I filtred the liquor, and exhaled it in a Glaſs on the Sand heat, it left Twenty four Grains of Gum, and in the cup was left Thirteen Grains of Pouder. -------- 8 I mixt the ſame Quantity of *Galls* and diſtill'd VVater, as in Exp. 1 Spirit of *Harts horn* one dram, ſet them on the Sand heat, after evaporation 37 grs, of Sediment remained. -------- 9 Took the ſame Quantity of *diſtilled Water* and *Galls*, as in Exp 1 and 9, immature *Vitriol* gr. 6 The VVater was exhaled on the Sand heat, there was left 43 Grains of Sediment. ------- 10 *Diſtilled Water* 3 ounce and half, *Oil Tartar* gr. 50 exhaled, Sediment gr. 14. Exp 11. *Galls*, *Oil of Tartar*, of each 40 grs. *diſtilled Water* 3 ounce and half all mixt and exhaled, Sedt. gr. 43 -------- Exp 12 The ſame quantity of *Galls*, *diſtill'd Water*, and *Oil of Tartar* as in the laſt, immature *Vitriol* gr. 7 mixt and exhaled, Sediment gr. 67. -------- Exp. 13 *Diſtill'd Water* as above, *Galls*, *Spirit of Hartshorn* of each 40 gr. *Vitriol* gr. 7, mixt and exhaled gr. 43 of Sediment -------- Exp. 14 *Galls Spirit of Hartshorn*, of each gr. 40 *Oil of Tartar*, gr. 36 *Vitriol* gr. 7 *Diſtilled Water* 3 ounce and half mixt and exhaled, left Sediment gr. 52 -------- Exp. 15 *Diſtill'd Water* 3 Ounce and half, Pouder of *Alum* gr. 10 mixt and exhaled gr. 10 of Sediment. —— Exp. 16 *Galls*, *Alum*, *Vitriol*, of each gr. 6 diſtilled Water two Ounce, mixt and exhaled left Sediment gr. 17 —— *Exp.* 16 *Galls*, *Alum*, *Vitriol*, of each gr. 6, *Oil of Tartar* gr. 42, *diſtill'd Water* 3 ounce and half, mixt and exhaled, Sediment gr. 23 —— *Exp.* 19 Took two drams Pouder of *Galls*, ſet it in a crucible in a calcining Furnace, in a hot Fire 10 Minutes, took it out, only grs. 26 of a white Pouder remained, to which when cold, the Load ſtone applyed, affected it not —— *Exp* 20 we took calcined Sediment of *Galls*, *Oil of Tartar*, *Alum*, and *Spirit* of *Hartshorn*, and applied to the Loadſtone, but it moved them not at all.

Now for ſome Reflections on theſe Experiments, which to the ignorant and unwary, will no doubt appear idle and trifling, as does every thing that comes not within their Kenn. And 1 From *Exp.* firſt and ſecond we ſee what a ſmall Quantity *Galls* loſe in weight by Infuſion and drying, and conſequently, what Allowance we are to make for their loſs, when we have occaſion to mix them with Mineral VVaters, and exhale afterwards. 2 That there is no Difference in loſs of Weight between old, and freſh poudered *Galls*. 3 From *Exp.* 1 2 and 7 compared, we ſee there is little or no ſenſible difference, between ſoft common, and diſtill'd Water, with regard to *Galls*. 4 from Exp: 4 That *Galls* thus treated, readily ſeparate themſelves into two parts viz a fine brown, tranſparent *Gum*, and a White *Earth*. The firſt whereof is to the laſt near as 18 to 11. 5 It's alſo plain that dried *Galls* either have no volatile parts, or that is not the principle which gives the *Purple Colour* with *Vitrol* or *Chalybeate* Waters 6 From *Fxp.* 5 See the difference of loſs of parts, between boyling away quickly over the open Fire, and evapourating ſlowly on a Sand heat, viz near a Seventh part, which muſt be our ſtandard in boyling *Chalybeats* with *Galls*. 7 From *Exp.* 6 Both *Gum* and *Earth* of the *Galls* ſeem ſtill to produce the ſame Effect, in giving their purple Colour with Chalybeates. 8 From *Exp.* 8 we ſee that the Addition of *Spirit of Hartshorn* to *diſtill'd Water*, makes no encreaſe to the Sediment. 9 From *Exp.* 9 None of the immature *Vitriol* is loſt by *Decoction* or *Evaporation*, nor did the Mixture gain any thing in Weight. 10 From *Exp.* 10 That Oil of Tartar loſes almoſt 3 4ths, or that 3 4ths of Oil of Tartar is meer Water imbibed from the Air by the Salt; but poudered *Galls* about 1 13th by *Evapouration*, or 1 5th, by a briſk *Decoction*, but Spirit of *Hartshorn* leaves nothing. 11 From *Exp.* 11th we obſerve a loſs of 4 grs. extraordinary. From *Exp.* 12. See the prodigious Addition of 24 grs. to the Sediment from adding only 6 grs. of *Vitriol* 13 From *Exp.* 13 here we ſee again, that beſides Spirit of *Hartshorn*, nothing is either loſt or added. 14 From Exp. 14 *Spirit of Hartshorn* added to Oil of Tartar helps it to take wing, ſo that we have much leſs Sediment from this Mixture, than we had from the ſame without the Spirits. 15 From Exp. 15 *Alum* is a compound Salt wholly fixt, whereof we are to loſe no part. The like we find in

Exp. 16 where *Vitriol* and *Galls* are joyned, but in 17 where Spirit of Hartshorn is added, not only is the Spirit loſt, but it carries off ſome part of the others with it, or in 18 where the *Spirit* is changed for a large quantity of *Oil of Tartar*, the event is the ſame, the Sediment being much leſs in proportion. 16 From Exp. 19 and 20 we are ſatisfied that *Precipitations* from *Chalybeats* with *Galls*, the Loadſtone attracting the dried and calcined Sediment is neither from any *Ferruginous* particles, or *Magnetic* property in the *Galls*, *Spirit of Hartshorn*, *Oil of Tartar*, or *Alum*, but from the *ferruginous* or *ochry* Sediment afforded by the Water only.

The occaſion of theſe Experiments, was upon examining Mineral Waters I always found a very large tribe turn Purple, violet, red, black, or blue with *Galls* & ſeveral of the mixtures when they had ſtood ſome time Curddled, and let fall a ſettling to the bottom of the Cup or Glaſs. The Water when taken up ſmel'd & taſted ſtrong of Iron ruſt, but after it had ſtood open ſome Hours it had quite loſt Smel and Taſte, together with it's Tranſparency, turned muddy, white, and unpleaſant, yet weighed heavier, as tho' an Addition had been made to it, inſtead of loſing any of it's parts, nor could this encreaſe in weight, and loſs of Transparency be any how prevented, by any Methods I had read or practiſed, till reflecting on the Waters change of colour and depoſiting a ſettling with *Galls*, I began to conſider whether this might not be *Galls* precipitating ſome Mineral Salt, Earth or Metal, as truely & really as *Marine Salt* precipitates *Silver*, and whether this *Precipitation* might not be forwarded & compleated by ſome Methods, and what ingredients were moſt likely to contribute thereto, and whether the Water retained the ſame Smel and Taſte after *precipitation* as before, or whether after one *precipitation*, the Water, with the ſame ingredients, would not *precipitate* again, and whether the *matter* precipitated might not be collected, and examined, to find out of what it conſiſted, and if after Separation, it was commiſcible again with the ſame or other Water, and give it the ſame Smel & Taſte as the Water had at the Springs, I preſently recollected what the ingenious Dr. *Hoffman* had obſerved on Spirit of *Hartshorn* Curdling *Chalybeats* with *Galls*, and what Dr. *Lyſter* had taken Notice off, that by rubbing the Cup with a piece of *Alum*, he obtain'd perfect Cryſtals from *Malton* Water. From theſe Hints the next Opportunity I had, with *Galls*, I inſtantly poured in ſome Spirit of *Hartshorn*

horn, the Water preſently Curdled, let fall a thick groſs Sediment, the ſupernatant Liquor perfectly clear and deſtitute of any ſmel or taſte of *Iron ruſt*, but being ſuſpicious that the Spirits of *Hartshorn* overpowered the Chalybeate Taſte, ſo as it was not diſtinguiſhable, the next ſtrong Chalybeate I found, I made the *precipitation* with *Galls* only, this ſupernatant liquor was alſo void of Taſte of *Iron* or *Steel*, then ſuſpecting that the time the Water had ſtood before it was quite clear, that principle being volatile, might have taken wing and been loſt, therefore I put down another Cup of the ſame *Chalybeat*, the ſame time as the other with the *Galls*, ſtanding much longer, it ſtill retained it's Taſte and Smel. Then I tried a little Solution of *Alum* put in with the *Galls*, this inſtantly Curdled the Water and threw down a Sediment, quicker than the other, but becauſe the roughneſs of Alum and Vitriol are ſo much alike, I might be deceived in my Taſte, as I might be by the Strength of the Spirits. I then put ſome Drops of *Oil of Tartar* in with the *Galls*, and found that anſwer the ſame deſign ſtill, with great Expedition, and the ſupernatant clear Liquor was taſteleſs alſo. The ſame I found with ſome other *Deliquated Oyls*, *Alcaline Spirits* and *lixivial Salts*, but Spirit of *Hartshorn*, and *Alum* being moſt common and eaſy, I always uſed them in all future Experiments, eſpecially as Spirits will not make ſome Waters Curdle, and *Alum* will not break other *Chalybeats*, but either one or the other anſwers all in *England*, as far as I can judge. I next tried whether *Galls*, and thoſe other Additions would cauſe a curdling and Precipitation in any other Waters beſides chalybeats, and found they would not. Then I collected and dried ſeveral of theſe Purple or black *Precipitations* and examined them, and found that the ſame principles did not exiſt in any other Water beſides *Chalybeat*, and therefore could not be ſtruck out of them.

Thus from the preceeding Experiments, In *precipitating Steel* out off a Chalybeate by *Galls*, the *Galls* being exactly weighed, and the Water juſtly meaſured, after the *precipitation*, the clear Liquor above muſt be poured off, and meaſured again, to find and know what part the Liquor, wherein is the *precipitation*, bears to the whole, to be ſatisfied what quantity of *Steel* or *Vitriol* we have obtained from the whole quantity of Water, after it has ſtood all Night becauſe tho we have the whole earthy part of the *Galls* in this Sediment, yet only ſo much of the *Gummy*, as the quantity of Water wherein the precipitation is, bears a proportion to the whole; the Mixture of this being *undiquaqual* through all and every part of the Water. Exp: gr: Suppoſe you put 40 grs. of Galls to 2 Quarts of Water, 24 gr. of this is diſſolvable *Gum*, which Mixes with all the Water. 12 gr. is Earth which falls down with the Sediment, which is lodged in one 8th of the Water, and with it 3 grs. or 1 8th part of the *Gum*, and 12 gr. Earth, the other 4 grs. being Flegm in the Gall, is not reckon'd, exhale this 8th part in one glaſs, and the ſame Quantity of that Water from the Spring, in another Glaſs, weigh both dry Sediments, and whatever the firſt Weighs heavier above 15 gr. (for the *Gall*) than the laſt, is the *Iron* or *Steel* that was volatile in that Water, but is now fixed, and ready for Examination ------ volatile Spirituous *Vehicles* or *Menſtruums* added to the *Galls* and Water to facilitate, accelerate or compleat the precipitation of the Steel, add nothing to the Sediment, or leave no fixt parts, as Spirits of Hartshorn, Sal armoniac, Sal volatile &c. even this added with a fixt Saline or oleaginous body, which might be thought to entangle and fix ſome of their parts, as *Alum or Oil of Tartar*, hence we are to diſcount nothing for the weight of thoſe Spirits. ------ any fixt diſſolvable Matter added as a *Coprecipitator*, will lie equally mixt in every part of the Water, and tho' (being fixt) it leave, weight for weight yet ſo much of it only muſt be allowed to the Sediment, as the Sediment bears a proportion to the whole as *Alum* -------- If *Oil of Tartar* is uſed for the *Coprecipitator*, Water drunk in from the Air, making up the greateſt part of it's weight, which exhales together with the other Water, we muſt allow but 2 10ths at moſt, for it's fixt parts in the Sediment after Evaporation; or more ſtrictly 2 9ths, and this 2 9ths being every where equally mixt with the Water, we muſt allow but ſuch a proportion of it to the Sediment, as that Sediment bears to the whole Body of Water with which it was mixt. -------- Since on mixing *Galls*, and any fixt or volatile alcaline Matter with the ſolution of *Vitriol*, the whole preſently Curdled, parted with and let fall a Sediment, and the bulk of the Liquor was perfectly clear above; and this clear Liquor poured off on freſh *Galls* or other *Aſtringent Pouders*, it neither turned red purple, blue or black after, only muddy, nor betrayed any other ſigns of vitriol in it, I ſay that all the *Vitriol* was fixt and precipitated out of the Water. eſpecially when in this ſediment, after Evaporation, I found and had, the vitriol weight for weight. --------- Since I can precipitate a known given quantity of vitriol out of Water, I ſay an unknown quantity may by the ſame Means be fixt, precipitated and ſeparated out off a Mineral *Chalybeate* Water, tho volatile, if not entangled by much alcaline calcarious Earth. --------------- It may perhaps be objected, that *Oyl of Tartar*, and *Spirit of Hartshorn*, both turn moſt Waters pearl, or white, and cauſe them to let fall a ſediment; and probably that *precipitation* which with *Galls* they ſeperate and caſt down, may be no further than the ſame they precipitate without *Galls.* Ans. we have two ſufficient proofs to the contrary, for they ſeparate moſt Earth without *Galls* from plain calcarious Waters, where is only Limeſtone Duſt and Nitre. 2 This precipitated Earth gathered, dried, and calcined anſwers not the Loadſtone at all, for *Galls* themſelves mixt with ſuch Waters and let ſtand 3 or 4 days the Mixture looks like a jelly, of a deep green colour. and has ſome Sediment beſides the *Galls* which will never obey the Loadſtone. I repeated ſeveral Affuſions of freſh warm Waters on *Galls*, till the Sediment or Earth of the poudered *Galls* ſcarce tinged either Solution of *Salt* or *Steel*, or *Steel-waters*, but forgot or had not time then to dry the *Galls*, and pour Brandy or rectified Spirits on the Pouder, and ſet them on a gentle Sand heat to try whether they contained any *Reſin*, and if that had the ſame tinging and precipitating Property with the *Gum.* Give me leave to add from the whole, as a truth of which I am fully convinced, that no *Precipitators* yet uſed to mineral Waters, *precipitate Salts* of any kind, but only meer *Minerals*, *Mettals*, or *Earths.* For tho' *Marine Salts* and *Solution* of *Silver* precipitate, yet it's the diſſolved Silver ſubſides, not the Salt. Tho' *Galls* and other Aſtringents with Chalybeate Waters, curdle and precipitate, yet it's not Vitriol that's precipitated, but *Iron* or *Iron-Earth*; for if ſuch Springs contain a *Vitriolic Salts* only, the mixture with *Galls* is from a blue to a deep black, and no ſenſible Sediment but that of the *Galls.* And where I ſeem to ſay the contrary in this Work, it's only in complyance with former Writers. It's true, a ſolution of *Copperas* or *Salt* of *Steel* with *Galls* affords ſome Sediment, but it's meer *Iron-earth*, not *Salt.* For if you diſſolve, filter, and cryſtalize Vitriol 1000 times, it ſtill leaves Earth.

To make the following Experiments exactly theſe *Cautions* are requiſite. 1 That the *Galls* uſed be all of the freſh, hard, blue kind either their *Pouder*, *Tincture*, or which is abſolutely beſt, their *Extract* or *Gum*, made up in fine tranſparent brown Cakes, from exhaling the filtred Tincture, for this being diſſolved mixes *undiquaqually* and equally in the Water, no groſs Earthy particles of it falls to the bottom, and on exhaling you have nothing to allow for loſs of Weight. 2 In preparing this *Extract* or *Gum* nothing of Iron muſt be uſed, but all of Glaſs, a Glaſs Tunnel, an evaporating Glaſs Veſſel, nor ſhould common Water be uſed, but only diſtilled Water. 3 The *Gum* when uſed, being weighed ſhould be diſſolved in a little diſtill'd warm Water. 4 The Experiments muſt be made at the Spring, and as much *Spirit of Hartshorn* poured in immediately, as will Curdle the Water, then it may be put up in Glaſs, Stone or Earthen Bottles, and ſent to any diſtance, or it may ſtand in an open veſſel till you find a proper time to exhale it. 5 Take care that no common Water be mixt with the *Chalybeat* uſed in the Experiment. 6 If the *Evaporation* is made in a Braſs Veſſel over an open Fire, when it's near gone the Sediment muſt be carefully attended, for ſhould it remain but a Minute over the Fire after the Water is gone, it turns a hard black Cinder. 7 If the Water riſes up or run immediately into a very large *Receiver* or *Bath*, that's ſeldom cleaned out, take one quantity out of the full Receiver to evaporate alone, the like quantity to mix with *Gum of Galls* and *Spirits*. Then emply, waſh and clean the *Receiver*, and when the Spring is quite cleared, take up the ſame quantity to evaporate alone, & to a fourth equal Meaſure, put the weight of *Gum* as to the ſecond, evaporate all ſeparately in *Glaſſes* on a *Sand Heat*, and ſee the Difference of all four. 8th Take three equal Quantities of any Chalybeate, to two of them put the ſame weight of *Galls* or *Gum* and pour in *Spirits* till they Curdle, to the third add nothing. put the firſt and third over the *Fire* in a *braſs pan*, or in *Glaſs* or *Porcellane* veſſels on a *Sand Heat*, and boyl away or evaporate immediately; the 2d let ſtand till it ſettle, and the Liquor above be clear, which pour off to the *precipitation*, evaporate, in two different Veſſels, on a Sand heat, and ſee the difference, of all the Sediments. 9 Let another portion of the ſame Spaw be taken up and ſtand in an open Veſſel, till it loſe it's tinging property with *Galls*, then put to an equal quantity with any one of the laſt, the ſame Weight of *Galls* or *Gum*, and evaporate with the reſt, and compare them all.

Table 2d Col. 1 *The Name of the* Spaw. 2d. *The Month* & *Year when the Experiment was made.* 3d. *The Quantity of Water uſed.* 4th *The weight of the dried* Sediment *ſtruck out by* Galls. 5th *The* Sediment *of the clear Liquor above the precipitation.* 6th *The total of both laſt.* 7 *The weight of Galls put to the Water.* 8 *The Sediment of the like exact meaſure of Water without Galls.* 9 *The difference of the two.*

Knowſley,	*Novr*: 1733	lb: 8.	grs: 24.	grs: 37.	gr: 61.		grs: 6.	grs: 55
Whitecar,	Do.	Do.	grs. 18.	grs: 31.	grs: 49.			
Lancaſter,	Do.	Do.	grs: 61.	grs: 42.	gr. 103.		grs: 40.	grs: 63.
Stenfield,	*Sept*: 38.	Do.	grs: 64.	gr: 195.	gr: 259.		gr: 227.	grs: 32.
Ilmington,	Do.	Do.	gr: 22 *h*.	gr: 22 *q*.	gr: 45.		gr: 20.	gr: 25.
Kingscliff,	Do.	Do.	gr: 64.	gr: 99.	gr: 163.		gr: 140.	gr: 23.
Aſtrope,	Do.	Do.	gr: 28.	gr. 64.	gr: 92.		gr: 44.	gr: 28.
Wellingburrow,	Do.	Do.	gr: 48.	gr: 64.	gr: 112.		gr: 33.	gr: 71
Northampton,	Do.	Do.	gr: 54 *q*.	gr: 28.	gr: 82 *h*.		gr: 49.	gr: 31 *h*.
Malton,	*Apr*: 1738.	Do.	gr. 104:	gr: 156.	gr: 260.	gr: 12:	gr: 200.	gr: 60.
Scarb: *purging*,	Do.	Dc.	gr: 102 *h*.	gr: 276.	gr: 378.		gr. 340.	gr. 38.
Do *Chalybeats*,	Do.	Do.	gr. 80.	gr. 188.	gr. 268.	gr. 60	gr. 248.	gr. 28:
Whitenabbs.	Do.	Do.			gr. 240.	gr. 40.	gr. 136.	gr. 104.
Hartlepool,	Do.	Do.	gr. 51:	gr, 190.	gr. 241.	gr: 38,	gr. 190.	gr. 51.
Carlton on Trent,	1737	Do.			gr. 88.	gr. 60.	gr. 16.	gr. 72.
Thoroton,	*Sep*. 1736	Do.	gr. 80.	gr. 140	gr. 220.	gr. 96:	gr.	
Malton,	Do.	Do			gr. 266.	gr. 29.	gr. 166.	gr. 78.

Tho' I have been able to produce a very few Experiments on this head, yet I made a great many, but having either loſt or miſlaid the papers of Notes, theſe are all that remain, and from them, we obſerve 1, That the Waters poured on *Pouder*, *Tincture*, or diſſolved *Gum* of *Galls*, ſome Curdled quickly and precipitated; others ſlowly, and ſome not at all but continued many hours of a tranſparent, red or purple colour, and taſted of Iron. 2 On droping or pouring in Spirit of Hartshorn, moſt of them broke preſently, ſome with large broad Flakes, ſwiming every where in the Liquor, ſome with ſmall Motts or Atoms, ſuch as we ſee in the beams of the Sun in a Room; according to the quantity of ſeparable and precipitable matter in different Waters. then the Curdled matter fell to the bottom, the Liquor above being clear. 3 Pour off this clear Liquor on poudered *Galls*, or any other aſtringent, no Curdling, Purple, or Red Colour, or freſh precipitation enſues 4 We ſmeled and taſted this clear Liquor, it had no longer any ſcent or Reliſh of a Chalybeate. 5 This clear Liquor was weigh'd with a Hydroſtatic Balance, and found it ſenſibly lighter, than the ſame plain Spaw Water, which had ſtood the ſame time in an open Veſſel, tho it might have been expected to weigh heavier, from the Addition of the diſſolved *Gum* of *Galls*, exiſting equally every where in the Water. 6 If double Quantity of both *Galls* and *Spirits* be added to the ſame meaſure of Water, and inſtantly bottled up, corked and waxed or bladder'd over, the Water was Purple, but would neither Curdle nor precipitate by carriage or long ſtanding, tho' we had ſome Waters carried ſeveral ſcores of Miles, which were ſome Weeks on the Road. 7 The dry precipitation of all thoſe Waters by Galls, was red, a fine deep, or blackiſh purple, all ſhined like clear broken pieces of Metal. 8 A few Waters I found where the ſupernatant Liquor above the precipitation, was ſtill purple or blue, but this poured off on freſh Galls Curdled and precipitated again, then the Liquor above was clear and taſtleſs, allowing for the little roughneſs of the *Galls*. 9 Some Waters alſo I met with which would not precipitate with *Galls* and *Spirits*, but a ſolution of a few Grains of *Alum* ſoon broke and precipitated the Steel out off them, but the Sediment was of a different Colour from that with Galls and Spirits. 10 The dried Sediment alſo after *Evaporation*, was white, gray, or a light brown, not purple or Crimſon. 11 Both Sediments dried and applyed to the Loadſtone, little of that with *Alum* was attracted by it, but much of that precipitated by Spirits, tho this is not the Caſe where the Water affords much ochre ſuppoſe *Alum* was the precipitator uſed. 12 Where the Spaw has a very large *Receiver*, ſeldom emptied or cleaned out, eſpecially if it runs not over, nor diſcharge it's ſelf viſibly; take any quantity of this Water, put *Galls* and Spirits to it, clean out the *Receiver*, take the ſame quantity of clear freſh Water, put out of the emptied clean *Baſon*, put alſo *Galls* and Spirits to it, both precipitation and dried Sediment of the firſt, will be larger than that of the laſt. 13 I took up two equal quantities of the ſame Water, to one I put *Galls* and *Spirits*, to the other none, let them both ſtand open 3 or 4 days, then poured off the clear from the Sediment of the firſt, evapourated both theſe and the plain Water ſeparately, till all the Humidity was gone. I diſſolved the Sediment in diſtill'd Water, filtred them, then evaporated to a *Lixivium* ſet them in a proper place to cryſtalize, the firſt with it's other Salts, projected ſeveral ſmal perfect beautifull cryſtals of *Immature Vitriol*, the laſt had none. 14 I ſometimes repeated and variedthe laſt Experiment thus, I took the precipitation with *Galls* and Spirits, and the plain Water, which had ſtood 3 or 4 days open, to an equal Meaſure of this with the laſt, I put the ſame quantity of Galls and Spirits as in the firſt, then ſet both in different diſhes on the Sand heat, and made two different *Lixiviums* from their Sediment, the firſt had fine *Vitriolic* Cryſtals interſperſed with it's Salts the laſt had none ——— From thoſe Cautions, obſervations, and additional proceſſes and experiments, we ſee.

Firſt ſince Chalybeats loſe their tinging property, by being expoſed, or long kept, they either contain ſomething volatile, or changable, or abſorbed and loſt, both to our Experiments and Senſes, but changed or abſorbed after it cannot be, for then would there only be an alteration of ſubſtance, not any loſs of weight. 2 They not only loſe their tinging property, but *Galls* can no more precipitate a Red, Purple, or Crimſon Sediment out of them, and inſtead of a tranſparent Purple Colour, the mixture is muddy and whitiſh, which by long ſtanding often becomes of a deep graſs Green, hence not only the Tinging Principle, but the precipitable matter is fled. 3 But the Sediment of Water which had loſt it's Tinging Principle before the addition of *Galls*, being of a different colour from that which had been precipitated when freſh taken up, makes it probable that the tinging principle, and precipitable Matter, are both one, and the ſame. 4 The Encreaſe of weight in that Sediment to whoſe Water freſh taken up, the Galls were added, beyond that Sediment to whoſe Water the Galls were put, when it had loſt it's tinging property, is a preſumption that this volatile Principle is fixt and retained. 5 If you pour Vinegar ſeveral times on Iron, let it dry, and ſcrape off the ruſt each Morning, and then pour warm Water on it, let ſtand all Night, pour off the ſupernatant clear Liquor on *Galls*, it will be blew, black or purple like a Chalybeate VVater, and will have the ſame Irony Smel and Taſte; exhale the Sediment, and calcine it, the Loadſtone will briskly attract it as it did the calcined Chalybeate Sediment; here is another Proof of *Iron* in the VVater. 6 But the *Saline part* of the Sediment being ſeparated from it's Earth, boyl'd up to a *Lixivium*, ſet by to cryſtalize, and affording *immature vitriol*, proves *vitriol* to be the Saline part of this volatile principle, ſo that it conſiſts of two parts an Earthy and Saline, both of them principles of *Iron*. 7. I preſume that all theſe ſeveral Experiments joyned together, prove the volatile Principle of thoſe Chalybeate Waters to be *Iron* or *Steel*. 8 Theſe Experiments not only enable us to form a right judgement, what that volatile Principle is, but with certainty to determine the different quantities, impregnating ſundry ſuch Waters, by fixing them and bringing them under our Senſes. 9 Being thus enabled to know both this principle and it's quantity, we can more ſurely know ſome part of the medical uſes and Effects of ſuch Waters. I ſay in ſome part, becauſe we muſt allow a great deal of odds between the moſt elaborate and curious preparations of *Steel* by *Art*, and that which is the product of *Nature* whoſe Miniature is ſo fine, ſubtle and volatile wherefore a part of it's Effects are beſt diſcovered from Experience of the uſe of ſuch Waters. 10 Since no preparation of *Galls* or other aſtringents, alone or with other helps, could any longer give a Red or Purple Colour, or cauſe a *Curdling* or *Precipitation* in the clear ſupernatant Liquor, poured off from the firſt *Precipitation*, I imagine that in the firſt precipitation, the whole Chalybeate precipitable principle in that Water was ſtruck out in the firſt Mixture. 11 Since very large *Reſervoirs* or Collection of Chalybeate Waters, weigh heavier, afford a larger precipitation by *Galls* and *Spirits*, and alſo a larger Sediment out of the plain Water, than the ſame Water does after it's clean'd out and cleared, then it ſeems that by long *Stagnation*, and a continual *Supply* drilling in, ſome parts of their *Volatile Principles* do unite, become heavier, and approach nearer a fixt State till at laſt they become ſo fixt, as to endure *Exhalation* of the Water over a ſtrong open fire. At one of theſe I took Water out of a very large full Reſervoir which took a Week or Ten Days to fill, and out of a Gallon of that muddy thick brown Water, I obtain'd 120 Grains of fixt Steel, then I made it be clean'd out, and when clear'd out of the ſame quantity of Water, with the ſame weight of *Galls* and *Spirits* I had only 52 Grains. Out of another very ſtrong Chalybeate, which had neither been clean'd out, nor run over of many Years, I obtaind a very great *precipitation*, on which I took the precipitable part out of a large quantity of Water dried and calcined it, and to my ſurprize found a piece of *Iron* in the bottom of the *crucible*, and the *Lixivium* afforded as much immature *vitriol* in Cryſtals, on which the old *Reſervoir* was taken down, a *Level* and Drain made for the Spring to clear it's ſelf and a neat ſmall Baſon put down, after which the precipitation was much leſs, no melted maſs of *Iron*, and only a little *Vitriol*, from the firſt quantity of Water, hence ariſes a Query, in practiſe, are both theſe Waters equally good in the ſame Caſe indicating the uſe of Chalybeat Waters? or may they not differ as to their uſe, one being preferable in ſome Caſes, and the other more adviſable in others? 12 Since Chalybeate Waters with *Galls* and *Spirits* mixt and inſtantly bottled up and cork'd, or rather (which was our Experiment ſeveral times) The Galls and Spirits put into the Bottles and the Water pour'd on them and inſtantly Cork'd, neither *Curdled* nor *Precipitated*, nor did ſuch Chalybeates as I have ſeen dug through leave any Ochre in their Crannies and ſubterranean paſſages, before they come at the Day; then is the open *Air* abſolutely neceſſary, to the precipitation of thoſe Minerals. Were they precipitable without the Air, they would fill up the *Chinks* and *Crannies* of *Rocks* or *Earth* through which they are ſtrained, and ſo be always burſting out in new and different ouzings, of this I met laſt Summer with a very remarkable inſtance, I came to a Rock covered with Ochre, under it I found on the bare Rock, abundance of *Vitriol*, but no viſible Spring, I broke down a piece of the Rock, which was jet black behind, but neither Ochre nor Vitriol, preſently follow'd a ſmall ſtream of a ſtrong Chalybeate. 13 From the quickneſs or ſlowneſs of the *Curdling* and *Precipitation* of a Water with *Galls* and *Spirits*, we may diſcover the proportion of Steel in it. 14 From the ſupernatant Liquor of ſome Chalybeates, being ſtill Blue or Purple, above the *Precipitation* with *Galls* and *Spirits*, we obſerve 1 That a Water highly ſaturated with *Vitriol*; a common given quantity of *Galls* will only precipitate a part, not the whole of it. 2 That *Galls* mixt with too great a Body of Water, will not *Curdle* nor *Precipitate* ſo quickly, as in a leſs Quantity. 3 That where there is a Blue or Purple ſupernatant Liquor above the Sediment, it's a great preſumption of ſome fixt Vitriol. 15 But let it always be remembred that theſe precipitable parts will vary, be leſs or more, according to the Seaſon, weather, and different Quantities of VVater ſent forth by the ſame Spring in equal times. 16 That the Ochre or Iron carries down the volatile Vitriol with it, and not the Galls.

Table 3d Col. 1 *The Name of the Spaw.* 2 *The quantity of Water uſed in the Experiment.* 3 *The weight of dried Earth precipitated out of that Water by Solution of Sugar of Lead.* 4 *The Weight of Earth obtained from the clear Liquor above the Sugar of Leads Sediment.*

Ilmington,	lbiis.	gr: 7 *b.*	gr. 8 *b.*
Aſtrope	Do	gr: 7	gr. 15.
Cliff,	Do	gr. 9	gr: 42.
Northampton,	Do	gr. 8	gr: 15.
Wellingburrow,	Do	gr. 6	gr: 15.
Stenfield,	lbiiis.	gr. 24	gr: 108
	lb. 4	gr: 24	gr. 157
	Do	gr. 22	

Willing to make the moſt of our ſhort time and ſmall Apparatus, at the Spring; I made ſome Experiments with another very conſiderable precipitator. *viz* Sugar of Lead. The laſt Water but one in this Table, weighed only 17 Grains in a Pint heavier than common Water, but when taken up and let ſtand 3 hours, it was 32 gr: S. heavier: i: e: it was 15 gr: S. heavier than before. Some of the ſame taken up at another time was 37 and half heavier than common Water. When I had with Solution of *Sugar* of *Lead* precipitated the White Sediment out of the Water, the clear poured off from the Sediment and let ſtand a little, weigh'd 30 gr. more than common Water: i. e. one Grain lighter than before *Sugar* of *Lead* was added, The clear Water poured off from this precipitation, and put to Tincture of *Galls* with Spirits, it ſtruck a deep Purple, Curdled, and let fall a large Sediment. *Vice verſa*, The clear Liquor pour'd off from precipitation with *Galls* and *Spirits*, and put on Solution of *Sugar* of *Lead*; precipitated juſt the ſame, as freſh Water of the Spring, which had never had *Galls* put to it. Clear Liquor pour'd off from precipitation with *Galls*, upon *Oyl* of *Tartar*; and the clear from off *Oyl of Tartar* upon *Gall*; &c. ſome Waters afforded ſeveral *Precipitations* with *Sugar* of *Lead*, ſome none but once, here obſerve. -------- Firſt That ſundry Waters afforded various Quantities of ſeparable or precipitable Matter by *Sugar of Lead*, according as the Waters contained leſs or more of that Matter. 2 That this Matter being dried and examined was always found to be meer *Earth*. 3 That this Earth calcined and applied to the *Load ſtone*, was not affected by it. 4 That this Earth is always of a white, whitiſh or grayiſh colour, not red brown, purple or black. 5 From which we ſay that theſe two precipitators, ſeparate and throw down two different kinds of Earths the one we have ſeen to be ferruginous, the other calcarious. 6 Since both *Sugar of Lead* and *Oyl of Tartar* precipitated the ſame quantity of ſediment out off the clear ſupernatans Liquor above Galls, as tho no *Precipitation* or *Separation* had been made from it before. I ſay that the Ingredients alter not, nor affect the principle percipitated by *Galls* or other Aſtringents, on the contrary, if *Galls* make the ſame precipitation in the clear Liquor poured off from above the Sediment with *Sugar of Lead*, as tho no previous ſeparation had been made; I ſay that each of them affect and precipitate their own different or reſpective Mineral or Earth, and that, at leaſt, each ſuch Mineral Water contains two ſeparable ſorts of Earth, of different kinds. Hence Notice we firſt the great advantage of precipitators in the Examination of Mineral Waters, for without them, the volatile principles of thoſe Waters, ſo far as we know, would be loſt to our judgment, ſince we could never otherwiſe fix, nor bring them under our Senſes and Examination;

tion; what a Buſtle has been about the Sundry Earths in them, and how many different Methods propoſed to Separate them one from another? Yet without any certainty when extracted; but ſee here, with what facility aed certainty different Earths are ſeparated from the ſame Waters. 2 We ſee they not only affect different Earths by *Precipitation*, but the different quantities of the ſame Earth in ſundry Waters; for ſuch as contain little of ſuch Earths they precipitate little; where more is thrown down, more was contain'd in the Water. 3 Not only do they afford us ſome knowledge of theſe Earths by *Precipitation*, but even by *Coloration*, thus a Water of a Peas-bloom colour with Galls, contains much calcarious Earth, one of a Greeniſh Yellow, with *Spirits* of *Hartshorn*, *Sal armoniac*, or *Oyl* of *Tartar*, is the product of Coal near the day, or of a very coarſe, ſoft mouldering Shale, in a thick broad *Stratum*, &c. 4 Not only do *Precipitators* diſcover the Earths in Mineral Waters, but often detect the Salts, as thoſe impregnated with *Marine Salt*, precipitate *Silver*. *Vitriol*, with *Galls*, *Logwood*, and *Aſtringents* turns red, purple, blue, mazarine &c. 5 I have reaſon to believe, that a due, indefalligable and exact proſecution of this Examination of Waters by *Precipitation*, and *Colorations*, performed by ingenious and judicious hands, would not only be of ſervice in diſcovering their *Medicinal Qualities*, but might be improved to the detecting of *Minerals*, *Mettals*, and *Semi Metals* themſelves, where the Waters coming from them riſe up to the Day, for the Springs from ſeveral of thoſe hidden Treaſures lay ſo deep, that they are only ſtrain'd through the Earth, thrown into larger ſubterranean Currents and never riſe to the Day. It's true, ſeveral of thoſe Metals conſiſt of Principles, as far as we know, both indiſſolvable, and incommiſcible with common Water, but yet this is *Gratis Dictum*, we have not yet ſufficient proof from practiſe, obſervation, and Experiments to know that, many different Colorations may be yet diſcovered that we are unacquainted with, and there may be a variety of *Precipitators* ſtill unknown but 2 allowing them to be indiſſolvable, whether is that in their perfect, or imperfect ſtate, whilſt in Embryo, or meer fluids, or in both but 3 allowing them (which yet is hardly reaſonable) to be indiſſolvable in both ſtates, will it follow that all the parts of their *Matrixes* wherein they breed and lie, are alſo inſeparable by Water? Some Curſory obſervations to this purpoſe I have made, but not being enough to lay down with any Certainty, I ſhall therefore omit them, having given this hint to others. 6 Since Examination of Waters by *Colorations* and *Precipitations* affords ſo much Light into their Principles, and conſequently into their uſes, and may be made ſtill of further great ſervices in Life, with regard to the Diſcovery of *Metals*, *Minerals* and *Semi Mettals*, this ſhould put us upon extending our Views by calling in the Aſſiſtance of other Ingredients both for *Coloration* & *Precipitation*, firſt upon Waters whoſe impregnating *Foſſils* & *Minerals* they waſh, we perfectly know, that when we come to others, with whoſe *Strata*, and *Subſtrata* of *Earths* we are perfectly unacquainted with, we might be able to determine from the Waters with ſome Certainty. Sure I am this project would anſwer in ſome, (to pay the Expences a hundred fold) if not in moſt, nor ſhould our want of Succeſs deterr any from this work. My *Viſits* and *Examinations* being Curſory, Short, and my *Apparatus* very ſcanty, juſt enough to give a general light into the *Medical Vertues* of the Waters, and even in that Reſpect far from what I judged neceſſary, or competent.

I made ſeveral *Experiments* with Animal *Blood*, *Gall*, *Urine*, and *Muſcles*, put into or mixt with ſome Chalybeat Waters. The firſt became much Redder and more fluid, the ſecond was of a Greeniſh Yellow, and often depoſited a Sediment, The third turned of a bright Yellow, The laſt became black or blackiſh, and ſmell'd ſtrong of Iron ruſt. Into one of the ſtrongeſt Sulphur Waters, I put a half blown bladder with ſweet *Serum* of the Blood, and a piece of ſtinking *raw Beef* tied to the neck of the Bladder, with a weight to ſink all; the next Morning the reddiſh *Serum* was become black, had through the Bladder got ſo much of the Spirit of the Spring, as gave it the exact ſmell of the Water. The ſame it was with another part of the *Serum* mixt with the Sulphur Water; The Beef had loſt it's former ſmell, and got the ſame ſtrong ſcent with freſh VVater, and from VVhite (for it was well waſhed and ſqueezed) was become very red, it's fat turned VVhite like Moulding. Some other *Experiments* of this kind I attempted, but not having time to repeat them often enough, I ſhall take no further notice, but from the firſt which were tried five or ſix times in different VVaters, we ſee that *Nitre* in VVaters reddens and thins the Blood. 2 That the *Ochre* and *Vitriol* blacken the Muſcles as well of dead as living Animal Bodies. 3 That ſuch VVaters brighten the Colour of both *Bile* and *Urine*; 4 That Sulphur Waters redden the ſolids, but blacken the fluids of Animal Bodies. 5 That the volatile ſulphur pierces the pores of the thickeſt ſtrongeſt Bladders, and Mixes with the fluids in them. 6 That Sulphur takes off the begun putrefaction of the ſolids and reſtores their ſweetneſs, only giving the ſmell of the Water.

Before I enter upon the proceſſes of *Evaporation*, and *Separation* of the parts, there are ſeveral things we muſt carefully avoid; which if neglected or committed, may either lead us into Errour, or render the Experiments uncertain. as 1 The Water for boyling away ſhould not be taken up in a Rainy Seaſon, or when the Springs are too high, for then, either the proportion of Sediment will be leſs to the quantity of Water, or land Floods will bring in Earth or Dirt, beſides the *Minerals* in the Spring. 2 The Water muſt be taken up clear, not fould or muddied, leſt it have at that time, and afford a larger quantity of Earth, than falls ordinarily to it's ſhare, it will alſo change or darken the colour of the Sediment. 3 The Spring ſhould have it's *Sludge*, *Ochre*, or Sediment cleaned out and waſhed, ſome time before the VVater for Evaporation be taken up, that ſo it may be clear, otherwiſe you may either have too much Sediment, or it's colour may be irrecoverably marr'd. 4 See that no Springs be got into the VVell to weaken it, or decieve you. 5 Let the Veſſel in which the VVater is carried, be very clean and new (if of VVood) leſt it give ſome taint, or make ſome Addition to the Sediment, therefore Earth or Glaſs bottles are beſt. 6 Be very choice of the Veſſel in which it's evaporated, for if it be a Chalybeat, and boyld away in *Iron*. the Sediment will always be too large, and perpetually black as a Toad, tho it ſhould happen to be meer calcarious Earth, and otherwiſe as white as Snow. If *Braſs*, ſhould the VVater contain marine Salt, the *Lixivium* will always be a Sea Green, as the laſt was black. If *Copper*, it will give the Salt a *Vitriolic* Taſte, and make it nauſeous, If *Copper tinn'd* the *Tin* muſt be ſcrap'd off with the dry Sediment. If evaporated in *Glazed Earthen Pipkins*, it's impoſſible that ever you ſhould be certain of the exact quantity of *Salt*, for if it's *Marine*, they will tranſude either a great part, or the whole of it, and wet all the Sand about them, which next day, when dry, will ſtick to the *Pipkin* white and caked; as we ſee in the two laſt inſtances of *Weatherſlack* and *Cartmall*, which were that time evaporated in *Pipkins* in a Sand heat. And after they have been once or twice uſed at moſt, the Sediments after will be black, or a naſty reddiſh brown, the Colour of the clay, the Pot was made of, and you will never obtain a fine *Lixivium*, nor pure *Salts*. But to prevent both theſe inconveniences as much as poſſible, when I evapourated in them, I at the ſame time evapourated a Quart in a clear *Braſs pan* I kept on purpoſe, ſo I had both all our Salt, and the ſediment preſerved it's natural Colour. Veſſels of *Delph*, and *White ware* will not bear the fire, for when all the VVater is ſpent, they break, ſo that only Glaſs, China, or Stone Baſons are fit for our purpoſe, for they neither loſe, alter, or add to the Sediment, but they are very expenſive; but there is no dependance on future Experiments with Sediments obtained any other way. Indeed where the Deſign extends no further, than to find out the Quantity and Kinds of contents, or fixt parts impregnating a Mineral VVater, a clean *Braſs pan* will ſerve the purpoſe beſt, next to Glaſs or Porcelane, ſeeing it neither adds, alters, nor diminiſhes the Sediments. 7 VVhen the Evapouration is made over the Fire, it muſt be very clear, the chimney clean; for the leaſt puff of S*moak* or bit of S*oot* will blacken the Sediment, and the *Lixivium* from it will never afford regular perfect Cryſtals. For when it's Moiſture is almoſt gone it will continue Months and Years, a thick, blackiſh brown *Lee*, and if it's diſſolved and filtred a hundred times, it will always be the ſame, till it be calcined, which will deſtroy moſt of it's Salt, eſpecially if *Marine*, for that will paſs through the Crucible. 8 The leaſt ſpeck or ſpot of *Dirt*, *Ruſt*, or *Burning* on the *Braſs pan* will ſtain the Sediment, and often prevent procuring of regular Cryſtals, but a clean bright pan is the only Veſſel we can have abroad, and has the leaſt inconvenience attending it of any *Metal Veſſel*, where we find the fixt parts of the VVater are very inconſiderable, we may boyl away any given quantity in a clean Pan to a 7th or 8th Part, then take it off the Fire, bottle it up, and ſend home to evaporate the reſt on a Sand heat at Leaſure, the Sediment will not be hurt. 9 The *Solution* of the S*ediment* for a *Lixivium* ſhould be made in *Diſtill'd Water*, to avoid the intermixture of foreign Earth or Salts, that may be in another VVater. 10 The Tunnel made uſe of for *Filtration*, muſt be *Glaſs*, for the Salts will quickly make *Iron* ruſt, and pull off it's *Tin*, and we have ſeen ruſty *Iron* turn a clear *Lixivium*, to a brown ſtiff Gelly that would never Cryſtalize. 11 The *Filtred Solution* muſt be boyled ſo low, till a Skin or *Pellicle* cover it's ſurface, and if any White Pouder appear at Bottom, it muſt be filtred again, or it will marr the projection of regular *Cryſtals*. 12 When the Water is boyled over an open fire, too great a heat, or force of Fire muſt not be uſed, but evaporated ſlowly; for from repeated obſervations, I have found this make an Alteration, in the Quantity of Sediment. 13 The *Lixivium* muſt not be ſet in too moiſt a place, for that will liquify the dry Salt or *Cryſtals*; much more prevent the projection of half the *Cryſtals* in the Brine; nor muſt it be ſet in too hot a place (except on a very ſlow Sand heat) nor ſhould it ſtand on a Table on a board Floor, which will be ſhaken by walking, and ſo ſpoil the Attraction of the Salts, and regular Formation of the *Cryſtals*, nor in a Window, through whoſe Creviſes and Chinks Duſt gets in and muddies the *Lixivium*. 14 As ſoon as the *Cryſtals* are perfectly projected, take them out of the *Lixivium*, lay them on a clean China Saucer to dry, if they turn White and fall down to duſt when dried, put them into the *Lixivium* again, boyl it up ſtronger, till a White Pouder appear in the bottom, then put in more diſtill'd Water and filtre again, repeat this operation, three, four, or half a dozen times, the *Cryſtals* will ſtand better after; for it was a White Calcarious Earth ſtill mixt with the Salt, that made them fall down before, and which on boyling the *Lixivium* higher, was that White Pouder at bottom. When the *Cryſtals* are dried, put them up in a clean Phial Glaſs, well cork'd and ſeal'd with Wax to keep out the Air. 15 If from the unſuitableneſs of the Seaſon, or preſent Moiſture of the Air, the *Lixiviums* having been ſtrong enough, and ſtood long without projecting any Cryſtals, boyl it over again with more Water till it's very ſtrong, filtre, ſet it by, and in a Night or two more the *Cryſtals* will project. 16 When a *Lixivium* has ſtood long without beginning to Cryſtalize, very often we find it covered with a variegated or white pellicle, which hindred the evaporation of the Water in it, take off this gently with a bone Knife, and lay on the ſide of the Cup, and it may cryſtalize after, without Filtration or freſh boyling. 17 Let no *Lixivium* be put into any Metallic Veſſel to cryſtalize, leſt it give it a taint.

Table 4th Column 1ſt *the Name of the Mineral Water.* 2 *The Month and Year when evaporated. The Quantity evaporated of each, was a* Gallon. 3 *The Weight of Sediment left.* 4 *The Quantity of Earth in that Sediment.* 5 *The Quantity of Salt.* 6 *The Kinds of Salt, and their Proportion, when more ſorts than One happen to be in it; where* N. *ſtands for Nitre.* M. *for Marrine* Salt &c. 7. *The Kinds of Earth.*

Claſs Firſt Plain Chalybeat Waters.

Place	Month	Year	Grains	Grains	Grains	Nitre	Earth
Wellinghurrow	July	1730	28				
Do	Septr.	1733	33	21	12	N.	br. Ochre
Do	July	1738	32	as before			
Northampton	July	1733	59				
Do	Septr:	1733	27	19	8	N.	Ochry
Newnham Regis	Septr.	1733	40	16	24	N: C.	L. Calc:
Do	Augt.	1735	60	25	32	N. C.	L. Calc
Do	July	1738	62	26	36	N. C.	L. Calc
Lanſhaw Bridge	July	1733	12	10	2		Ochre,
Ilmington	Sept.	1733	20	9	10		Ochre,
Knowſley	Decr.	1733	6	4	2	N. C.	Ochre,
Preſcod	April.	1734	27	10	17		Ochre,
Latham	April.	1734	26	13	13	M.	Sand,
White Carr	Decb.	1733	67	41	26	M. N. C.	Ochre,

Lancaſter

Lancaſter	Decb.	1734	40	24	15	M:	Ochre,
Wigan	Decb.	1733	12			N:	Ochre,
Croſsfell Stockbond.	June.	1738	7				Ochre,
Dudly	Sept:	1738	34	19	15	M:	Ochre,
Shiphnall	Sept.	1738	18	13 *h*	4 *h*	M.	Ochre,
Dinnington Redbrooklane	Sept.	1738	30	19	11	N. C.	Alcaline,
Congleton	Octr.	1738	46	24	22	N. C.	L. Calc.
Malvern Holy Well,	Septr.	1738	5	3	2	M.	L. Calc.
Do. Dogwell.	Septr.	1738	10	7	3	M.	
Benthall	Septr.	1738	16	12	4	M:	Ochre,
Oxford new well,	Octr.	1738	36	22	14	N 2 M 4	
Coventry Park well,	Octr.	1738	20	12	8	N.	Ochre.
Wiſſingham,	April.	1738	13	7	6	M.	Ochre,
Halliwell,	April.	1738	45	15	30	M. N: C:	Ochre
Durham,	April:	1738	32	20	12	M.	Ochre,
Sephton	April.	1734	16	11	15	N: C. M.	Ochre,
Millars Spaw Stockport	April	1734	24	12	12	M. N.	Ochre,
Moſs Houſe,	April	1734	23	18	5		Ochre
Bournley,	July	1733	33	20	13	N. C:	Ochre,
Glentworth	Octr,	1734	28	22	6		Ochre,
Aſtrope	July,	1703	17 *h*				

Do

Do	Septr. 1733	45	24	21	N.	Och; L; Calc.
Do	Augt. 1735	42		as before		
Do	July. 1738	44	as before			
Moretonſee Chalybeat,	Septr: 1738	52	25	27	N: C:	L: Calc.
Worton,	1738-9	42	15	27	N: C:	L: Calc.
Banbury,	Do	29	13	16	N: 1 M: 2	L; Calc:
Aynho	Do	30	17	13	N: C	Sandy clay
Wroxton,	Do	25	16	9	M:	
Bloxham	Do	32	23	9	N: M:	Alc: Ear:
Hooknorton,	Do	23	18	5	M.	Sand.
Blackmore.	Do	18	12	6	M,	Ochre
Cambridge,	Do	40	21	19	M.	L. Calc
Calverton,	Do	70				
Coſgrave,	Do	28				

Claſs Second Laxative and Purging Chalybeats.

Binley,	Septr. 1735	65				
Do	July. 1738	73	26	47	N. C.	Ochre &c.
Derby,	Octr. 1736	264	134	130	M:	Ochre
Do	Octr. 1738	136	as before			
Kingscliff	July 1733	72				
Do	Septr. 1733	140	75	65	N; C;	L; C; Ochre

Do

Do	Augt. 1735	160				
Do	July. 1738	197	110	77	N: C,	br: Ochre
Hartlepool,	Octr. 1738	100	50	50	N: 2 M: 1	L: Calc:
Do: *Unencloſed*	Apr. 1738	240	72	168	M: 6 N: 1:	L: C:
Kirby Thewer upper.	June 1738	190	140	50	N. C	L. C:
Do Nether.	June 1738	184	130	54	N: C: Lap.	C: O.
Thoroton.	Septr 1736	120	80	40	N:	Ochre Clay.
Orſton.	Septr 1736	136	110	26	N:	Ochre L: Calc:
Hartlepool.	May 1739	120			N: 2 M 1.	L: Calc.
Tarleton.	Dec. 1732	213	90	123	N: 5 M: 2	Marle
Do	April 1734	260	120	140	N. 5 M. 2	Marle
Wetherſlack	Decb. 1732	590	30	560	M.	L. Calc
Do	Augt. 1736	700	35	665	M.	L. Calc.
Do	Octr. 1736	700	35	665	M.	L. Calc.
Do	Octr. 1737	352			M.	L. Calc.
Stanger.	June 1738	1170	28	1080	M.	L. Calc.
Cartmall.	Deb. 1732	440	66	376	M. 5 N. 1	L. Calc.
Do	Aug. 1736	390	57	333	M. 4 N. 1	L, Calc,
Do	Octr 1737	120				
New Spaw,	Augt 1736	440	64	376	M 5 N 1	L. Calc
Neweſt,	June 1738	488	26	462	M. only	W. Sand.
Gainsburrow,	July 1738	192	120	72	N. C.	L. Calc

Whitenabbs

Whitenabbs	April	1738	136	64	72	M. V. N.	Ochre.

Claſs Third Simple Nitrous Purging Waters.

Cheltenham	Septr.	1738	747	74	673	N. C.	L. Calc
Cheltenham	Decr.	1738	622	42	580	N. C.	L. Calc
Do	July	1739	692	70	622	N. C.	L. Calc
Arle,	Do	Do	360	72	288	N: pec:	Clay
Moreton ſee pump,	Septr:	1738	277	76	210	N: C.	L. Calc
Comner	Octr.	1738	296	52	244	N. C.	L. Calc
Cliffton	Octr.	1738	74	9	65	N. P.	W. Sand
Cornwell	April.	1738	154	120	34	N: M:	L: Calc
Townley	July	1738	40	13	27	N. C.	Sand

Claſs Third Purging Waters from Marine Salt.

Leamington	Augt.	1795	960	30	930	M.	L. Calc.
St. *Eraſmus Well*	Sept.	1738	300	28	272	M.	Moſs.
Do *Marſh.*	Septr	1738	480	33	447	M.	Moſs
Caergyrle.	Octr.	1738	220	66	154	M.	L. Calc
Barrowdale Well.	June	1738	3840	360	3480	M.	L. Calc.

Claſs Fourth Nitro, Aluminous Purging Waters.

Holt Leiceſterſhire,	Octr	1738	70	80	630	N. 7 al: 1	Clay Al: Glebe
Do	Octr.	1739	540	120	420	N: 7 Al: 1.	Do

Claſs Fifth Plain Sulphur Waters.

Durham,	April.	1738	56	18	38	M.	Stone Powder
Congleton,	Octr,	1738	27	11	16	N. C.	L. Calc.
Wardrew,	June	1738	25	3	21	M.	L. Calc

Willenhall,	Septr.	1738	25	20	5	N: C,	L. Calc
Codſal Wood,	Septr.	1738	5				L, Calc,
Lockwood	May	1734	60			N.	L. Calc.
Claſſelhall or Colms	Dec.	1734	20	7	13	M. 2 N. 1	L: C
Cunley houſe	July.	1733	49	18	31	N.	Moſs
Whalley,	July	1733	30	19	11	M: N.	L. Calc
Inglewhite,	Decb.	1733	24	19	5	N.	Ochre
Loansburrow,	July	1733	20			N.	L; Calc:

Claſs Sixth Purging Sulphur Waters.

Maudſly,	April	1734	960	30	930	M:	L: Calc.
Crofts.	April	1738	190	150	40	N: 3 M 1.	L. C.
Deddington,	Octr	1738	87	44	43	M.	Clay.
Moffat upper Well	Augt	1730	48	4	44	M. 90 N: 1	L. Calc:
Do	Aug.	1733	55	5	50	Do	Do
Moffat Lower,	Aug.	1730	50	4	45	Do	Do
Do	Aug.	1733	68	6	62	Do	Do
Sutton Bog,	March	1739	140	9	130	N: Pec.	Clay.
Do	July	1739	166	20	146	N: Pec.	Clay.
Kingham bog,	March	1739	150	28	122	N. Selen.	Clay.
Chadlington,	April	1739	90	17	73	N. Pec.	Earth
Carſtarphen.	Octr:	139	11	3	7	N: 9 M: 2	B: Clay

Having thus brought together in one view the Contents, or fixt parts of all thoſe Salutary Springs, they will admit of ſeveral general Reflections, to underſtand which to advantage, it will be neceſſary to have regard, as well to the natural Hiſtory, as to this Table. And firſt the ſmall ſcantling of fixt parts that ſuch Waters contain, whoſe virtues lye in their volatile Principles, whether of Iron or Sulphur, being a very few Grains to each moderate Doſe, which when ſeparated from the vehicle, we can lay no great ſtreſs upon, to anſwer any valuable Intention in Medicine, for even with the Vehicle, their volatile parts being evaporated, anſwer ſcarce ſo much as good clear Spring Water freſh taken up. 2 Waters of the ſame Claſs are therefore more or leſs Medicinal, as they contain or carry a greater or ſmaller portion of volatile parts, or as theſe parts are more or leſs ſubtle or fugitive. 3 Tho all Chalybeates at the Spring are found to contain volatile Iron or Vitriol, yet in how few of their Sediments do we meet with any of this Salt, remaining after *Evaporation?* 4 We ſee that the only Difference between Alterative and Purging Waters, lies in the different Quantities of the Purging Salt they contain; for ſuch as have more Salt, are Purging, if little, and drunk in a moderate Doſe, they are only alterative. 5 We find from unqueſtionable Experience, that a Calcarious Earth joyned with a Purging Salt, in a Mineral Water, acts with the Salt, as a part of that Purging Salt, tho not to the ſame Degree, otherwiſe ſome Waters which contain four or five times as much of that Earth as Salt, could never prove purgative, with ſo ſmall a Saline part. This Earth therefore anſwers a double intention, viz both of a purgative and of an abſorbent. Ochre, on the contrary ſeems rather a blunter, than a Sharpner of the Salts. But moſt Purging Waters that have Ochre contain alſo a Calcarious Earth which ſharpens the Salt, or is at leaſt a balance to the Ochre. 6 We find here ſeveral Waters referr'd to the Claſs of Purgatives, which really are not entitled to it, from their ſcarcity of Salt, but cuſtom has obtained to reckon them ſuch, by making up in the Quantity, what is wanting in the Quantity; ſuch act not at all, or but very little from the Stimulation of the Salts. but from the Bulk and weight of Water drunk. 7 When a very ſtrong Chalybeate Water is put on the Fire to boyl away, as it begins to boyl, and a little time after, it appears all Curdled and Broke, full of Reddiſh brown *Flakes*, then the volatile *Vitriol* and *Iron* are packing up for a Remove of the very parts that *Galls* precipitate; this was a thick *Scum* on the Surface of the Water before it boyled, which now breaks and mixes with it. But after a part of the Water is waſted, this curdling often diſappears, the Liquor turns no more purple or brown with *Galls*; and whilſt it's evaporating, it's of a tranſparent browniſh colour, when all the Humidity is gone, there remains a browniſh Sediment, hairy and often Stringy, and is like ſoft light Iron ruſt, but if the Water is poor of Steel, or contains much Calcarious Earth, you can obſerve neither a thick brown *Scum* nor Curdling with *Flakes*; ſuch tinge not with *Galls* after the firſt heat, or a few hours ſtanding open, cold. Hence it appears that the Volatile Steel of all Chalybeats ſit not equally light, or ſo readily ſeparable from all the Tribe. 8 Such Waters as bring along with them a deal of very fine calcarious Earth, if evaporated Slowly, on a Sand heat, or over the Fire, as the Watery parts fly off, one may plainly ſee the Earthy ones approach much nearer one another, and form ſmall thin *Flakes*, till at laſt they meet, joyn, and cover the ſurface of the Water all over the Veſſel; then the Remainder of the Water evaporates very ſlowly, till the *Cruſt* is broke in; then you often ſee the ſides of the Veſſel cruſted over in the ſame manner, when all the Water is gone, and the Sediment dry; theſe thin ſmall Cakes are very near as White as Snow. Such Waters are generally *Petrifyers* and afford the fineſt Sort of *Petrefactions*; 9 Some Waters of the ſame kind, when the whole Aqueous part is ſpent, the dry Sediment is ſo faſt incruſtated on the bottom & ſides of the Veſſel, as tho' they were both of a piece; but when the Veſſel is cold, and has ſtood ſome hours, the Sediment readily peels off in *Flakes*. 10 We took a Spaw Water well ſtorred with fixt parts, evaporated a Gallon of it very ſlowly on a Sand heat, another Gallon we boyled away very quickly over a clear ſtrong open fire. The firſt left four or five Grains more Sediment than the laſt, hence it's probable that a ſtrong open Fire carries off ſome few parts that might be retained. 11 We took a ſtrong Chalybeate Water, and near the Spring threw a quantity of it into a Still, joyned a Receiver to it and luted them well, put fire under, and drew off about half of the Water, then ſtopt the Diſtillation, and let both cool, but upon Tryal, neither the Water in the ſtill, nor that in the Receiver ſtruck in the leaſt Red or Purple with *Galls*. 12 We tried four or five more

Chalybeates, thus, we took a clean Glaſs Retort, filled it half full of one of thoſe Waters, and into the Reciever we put fine filtred Tincture of *Galls*, ſo high as might overtop the Noſe of the Retort an Inch, ſet the laſt on a Sand heat, after they were well luted, drew off one half of the Water, but tho it firſt Curdled a little, as above, and then reaſummed a tranſparent browniſh Colour, yet the firſt Colour of the Tincture of *Galls* was not altered, nor would the ſame Tincture affect the reſt of the Water in the Retort. 13 We took two Retorts, fill'd both half full of Water, to one we put 10 Grains of Pouder of *Galls*, and a dram of *Spirit* of *Hartshorn*, ſhaked them well together, the other had only of the plain Chalybeat Water put in it, both Receivers were luted on, and the Retorts ſet on the Sand heat, till both Waters were come over into the Receivers, a deep crimſon purple coloured Sediment was left in the one, and a light ochry coloured Sediment in the other, both taken carefully out and weighed, the firſt always weighed ſome Grains heavier than the other, beſides allowing for the Galls, with the Water in the laſt Receiver. I tried a multitude of Experiments to no purpoſe, for by Smel, Taſte, Colorations and Solutions. I found it in all Reſpects the ſame with common Water diſtilled, for the volatile parts were gone, and the fixt did not come over into the Receiver. Hence 1ſt Mineral Waters ſeem only common Water impregnated with Mineral Principles. 2 That theſe Principles are of two ſorts, volatile and fixt. 3 That the volatile may be fixt, and both ſeparated from the Water. 4 And when they are ſeparated from it, the Water returns to it's original State of ſimple Element. 5 And that without precipitators, theſe volatile Principles muſt be loſt, either by Evaporation in the Sun or Air, Diſtillation or Decoction. 6 That this ſimple Element was only a vehicle to bring thoſe Mineral particles to the day and preſerve them in a fluid ſtate, lodged in it's pores, and mixt together variouſly, tho all appear an uniform body, at firſt view. 14 From this Table we ſee at once, what Waters abound with fixt parts of any kind, which are the moſt *invigorating*, *exhilerating*, *detergent*, *irritating*, *healing*, *drying*, *cooling*, *heating*, *purging*, *binding*, *ſweetening*, &c. Which have the moſt Saline, or earthy parts, which are the thineſt, and of what kinds their Salts and Earths are, whether they produce their Effects by their fixt or volatile principles, &c. 15 That a larger quantity of Salts in a Mineral Water, drunk in a moderate Doſe, Purges, but a Water impregnated with a leſſer quantity is diuretic, then it's probable that one difference between a Purgative & Diuretic Water is, that the firſt irritates ſooner and more ſenſibly, the other is longer and duller; tho the *Salts* be both of the ſame kind, yet the difference in their quantity, makes the difference in their Operation. Q: *Will this hold good in other Medicines*? then are the *Kidneys* more ſenſible and ſooner ſtimulated, than the *Stomach* and *Inteſtines*, *but why*? For tho' the laſt are lined with a thick mucous coat, to defend them from the irritation of their contents. and ſtrain the chyle through it, before it enter the mouths of the *Lacteals* that they be not ſtopt; yet before the Water reaches the *Kidneys*, it's poured into the whole *Maſs of Blood*, and *Animal Juyces*? Is it from a greater ſenſalion of a *Stimulus*, a more diluted ſtate of the Blood, or it's greater Bulk, or from all three? 16 Tho' the fixt Salts impregnating moſt of thoſe Waters, are what we call Marine, and Nitre, yet there are conſiderable Differences of both, Tho' the Cryſtals of Sea Salt, Brines, and Rock ſalt, are tubes, yet ſome are perfect, with a bright ſmooth ſolid ſurface; others have a croſs on their upper ſide; ſeveral project Cryſtals with a round ſmall cavity on their ſurface, like an O. The ſecond ſort is found in Sulphur Waters chiefly. The firſt in Sea Salt or Brines, tho their Salts whiſt boyling in the *Pans* appear of a very different Figure, yet when diſſolved again in a ſmall Quantity, it's Cryſtals prove tubes. As to Nitre, tho we meet with moſt of it, of Dr. *Liſters* Sal *Calcarium*, yet we ſometimes meet with other ſorts, as the curious *Nitrum Palmiforme* in *Cliffton* Water, the *Nitrum Turbinatum* in *Aſtrope*, the *Tricuspidum* in *Cliff*, the *Nonogonale* of *Kinalton*, &c 17 The Marine Salt in the Nitrous Purging Waters, liquifies moſt and ſooneſt on any Alteration of the Air, yea ſometimes hardly diſcoverable from the *Barometer*, and as it liquifies ſooneſt and readilyeſt of all the Salts, ſo it projects it's cryſtals more tediouſly and difficultly i. e. the attractive power of the particles of Sea Salt, is the ſloweſt of all others, and it attracts the VVater in the Air, more vigorouſly than any of the *Natural Mineral Salts*. 18 Of all the *Natural Mineral Salts*, *Nitre* after it has cryſtalized, is the apteſt to turn VVhite, and fall down to a Pouder or Duſt. as *Vitriol* is to ruſt, and *Alum* to turn Mealy on the outſide, tho both the laſt preſerve their Figure and Coheſion; but they are all eaſily reſtored, and of all ſorts of *Nitre Sal Calcarium* is the hardeſt to preſerve clear, and in Cryſtals; eſpecially that which Cryſtalizes ſooneſt, as in a very hot Room, or in a hot droughty windy ſeaſon; to prevent or remedy which we have ſhown already. 19 neither Vitriol nor Alum found in any of theſe VVaters purge at all, even *Holt* it's ſelf Purges not as an *Aluminous*, but as a *Nitrous* Water, nor will a moderate quantity of Coal ſough Water, which often contains much fixt Vitriol, Purge at all, but ſometimes Vomits, by it's contracting the Stomach too much, and irritating it roughly, the like do VVaters impregnated too highly with *Marine* or *Rock Salt*, as *Brines*, *Barrowdale* VVell *Maudſley* &c. So that *Nitre* & *Marine* Salt, are the ſole Purgatives in theſe VVaters, but cheiefly the firſt, eſpecially where calcarious Earth is joyned with it, and all the ſorts of theſe two Salts Purge, as far as we find here. 20 If a VVater is highly impregnated with *Marine Salt*, it Purges, lightens the Body, and ſharpens the Appetite, but excites great Heat, Thirſt, & a feveriſhneſs there from, If it's impregnated with Nitre, it purges, is more diuretic, lightens, cools, and refreſhes the Body, whets the Stomach, and promotes Digeſtion. 21 Of all VVaters impregnated by Marine Salt only, ſuch as have alſo Sulphur, vitriol, whether ſenſible or inſenſible, Ochre, and Calcarious Earth, are beſt, being adapted to the moſt intentions of any others of that Claſs. 22 Here we ſee a little of the fluctualing uncertain ſtate of Mineral VVaters, how, tho' always of the ſame kind, being the product of the ſame Minerals, yet not always ſaturated with Minerals to the ſame Degree, or proportion, for 1 The greater the Rains, the higher and fuller the Springs, the poorer is the Water of it's *Mineral* parts, the diſſolvable *Minerals* being both more ſoaked and waſhed away, by ſuch impetuous frequent or long *Floods*, and becauſe allowing the ſame portion of *Minerals* to be in the Waters as at other times, yet being mixt with a much larger body or quantity of Water, it muſt therefore be weaker of them. 2 Nor is a very great and long Drought beſt for them, for tho' a Gallon of one Water which we tried, afforded above 263 Grains of Sediment in *April* 1732 yet the next *Septr.* after a very *Droughty Summer*, a Gallon of the ſame Water (*viz Stenfield*) yielded little above 160 Grains, or not two thirds of what we had from it in April before, but in *September* 1733, after a more leaking, yet not wet Summer, a Gallon of it left about 270 Grains. For as in great and long *Rains* the Waters waſh the Salts and Earth too much out of the

Minerals, ſo in *great Drought* the Salt and Earth harden and ſtick in the Water Paſſages under Ground, before they come to us therefore Mineral Waters are richeſt and beſt after moderate *Rains* ſucceeding long *Drought.* 3 *Rains* and *Drought* will always affect Mineral Waters as their impregnating *Minerals* lye ſhallower, or deeper under Ground; for if they riſe from a great Depth, *Rain* affects them not at all, for it penetrates the Earth not many Feet, as *Miners* very often and juſtly obſerve. 4 But it's not improbable that a Mineral Water may be affected by *Rains* and yet it's quantity not altered, for the origine of the Spring may lye very deep, and the Mineral it waſhes may lye near the Day, then tho' the quantity of Water may not be encreaſed, yet the Minerals may be more waſhed, and have other Drains for their Water, when they lye ſhallow in the Ground, ſuch we have ſeen. 5 From this Table it's plain that Mineral Waters (and perhaps Minerals themſelves) have their Encreaſe and Decreaſe. A Gallon of *Cliff* Water exhaled in 1703, left only 72 Grs: of Sediment. But 30 Years after, *viz* in 1733, the ſame quantity of Water afforded double the quantity of Sediment. And in *September* 1735, during the Rain of the Seaſon, which for 15 Months paſt, and near 5 Months after, had been the wetteſt in the memory of Man, yet a Gallon of it exhaled, left 160 Grs. And in *July* 1738 the ſame quantity of it left 187 Grs It's the ſame with *Aſtrope* Waters, for in 1703 a Gallon of it left 17 Grs: & a half. In 1735 it left 45 Grs. In *July* 1738 it afforded 44 Grs. And in 1733 44 Grs. *Wellingburrow* keeps pritty much at a ſtand. But the Caſe of *Northampton* is the contrary, for a Gallon of it evaporated in *July* 1703, left 59 Grs. But in *Sept*: 1733 the like quantity left only 27 Grs: And if I miſtake not Mr. *Morton* uſed Wine Meaſure, and we uſe Ale Meaſure. *Bingley* is alſo upon the Encreaſe. *Scarburgh* about the Year 1640, two Gallons of it's Spaw left only one Ounce of Sediment; But in 1663 or 4, five Quarts afforded the ſame. In *Octr*: 1731 a Gallon of the Purging Water left about 15 Penny weight and half, in *Debr*: after it left only 12 and a half Penny weight. in *July* 1733, a Gallon of it left about 14 Penny weight and half. And a Gallon of the Chalybeate left 10 Penny weight and quarter. In *Sept*: 1733, The Purging Water left 12 Penny weight and 3 quarters. In *Debr*: 1733 Dr *Shaw* found only 10 Penny weight and a quarter in it (allowing 34 Ounces and a half to a Quart of Wine Meaſure of this Water, which is the weight we found it oft after) In *April* 1738 a Gallon of the Purging Water left of Sediment above 14 Penny weight; a Gallon of the middle Spring afforded near 12 Penny weight and half. A Gallon of the Chalybeat yielded near 10 Penny weight and half. So that allowing all the three Springs to diſcharge themſelves into one Receiver, a Gallon of that mixt Water would afford 12 Penny weight and 1 third of Sediment. This laſt Tryal was in the Spring after the great ſhock the Spaw had received in *January* when it was loſt, and with great Difficulty and Expence recovered again, both with an Advantage & a diſadvantage, as to the firſt, the Water was more fraughted and enriched with the Minerals than it had been for 2 Years paſt, and contained more of the Chalybeat principle eſpecially, than ever it was ſtored with before, as appears from ſome former Papers, wherein I ſtruck the Steel out of it: But it afforded much leſs Water, a plain Sign, that tho' they had recovered the true, yet not all the Spring. As to *Harrigate Sulphur Well* (the uppermoſt of the three only is here meant) Dr, *French* was the firſt that evaporated it, as far as we can find, and he found a pound of Sediment in 7 Gallons of it, but he neither tells us what meaſure or weights he uſed. Dr. *Neal* of *Leeds* after him could only obtain one Ounce from a Gallon of it, but here muſt be ſome Miſtake, and in *October* 1731, and *April* 1732 each Gallon left 2 Ounces of Sediment. In *Aug*: 1736 when we evaporated ſome of it again, we had not ſo much. 6 This ſeems to intimate, that ſome Springs that were only common Water before, may in time, from cauſes not yet ſufficiently known to us, become impregnated with Minerals, highly entitling them to the medicinal Claſs. And on the contrary, that the moſt Effectual and beſt Mineral Waters, may weaken wear out, and by ſome accident, become no more than common Water. 7 This ſhould put us upon enquiring into the ſtate of our Mineral Springs. 1ſt That they degenerate not, and ſo become effet and uſeleſs, by having their paſſages blockt up, or that other Springs, and land Floods, get not into them; or that their impregnating Minerals be not diſturbed, digg'd up and carried away, or that the *Embryoniſm*, or *Solubility* of the *Minerals* be not paſt, either by *Induration* or *Conſumption*. Or laſtly, that the former Chinks and Cranies through which the Water ſprung up, be not ſtopt, and the Waters have not forced to themſelves another diſtant and undiſcovered

Diſcharge. 2 Not only ſhould we ſee that our Springs are not decayed and become effet, but ſince there are ſuch *Fluctuations* in Mineral Waters, we ſhould obſerve whether the *Decreaſe* and *Increaſe* of their contained Minerals be *Periodic* and *Erratic* of long or ſhort *Duration*, if this change depends on the *Air*, *Weather*, or on what other cauſes, and to diſcover at what times they are richeſt or pooreſt, ſo as not only the Sick may know when they may expect moſt ſervice from them; but that ſuch Waters as are ſent abroad to conſiderable Diſtances, may be Bottled up and ſent off when richeſt of the Minerals, as *Scarburgh*, *Cheltenham*, *Holt*, &c. 8 From the difference of Sediments obſerved in the ſame VVaters at different times, we learn that ſeeming differences among ſundry Authors, as to the quantity of fixt parts, from any given Mineral VVater, may yet all be true, when the Experiments are made at different, and not at one and the ſame time, and all done in the ſame Manner, with the ſame kind of Inſtruments, for we have ſhown before that a difference of theſe will make a difference in the parts, where there really is none. 9 Tho' we have ſufficiently proved a difference of the Quantities of Sediment in the ſame VVater, yet have we not diſcovered, nor can we yet allow difference in the principles, except the impregnating Minerals themſelves are changed which is not very likely.

23 All the different Earths we have been able to diſcover in the above VVaters, are reducible to *Ochre*, *Calcarious Earth*, *Stone-pouder*, *Clay*, *Sand*, *Marle*, and we have often found two or three of them in the ſame VVater, tho' we are only acquainted with ſome of the medicinal uſes of the two firſt. 24 Moſt of the Chalybeat VVaters contain *Ochre*, which is a kind of *Iron ruſt*, or very light ferruginous Stringy Earth, often the lighteſt of all others; hence no wonder it's of ſo healing a nature, ſince it contains the very ſame principles of *Iron*, viz. *Sulphur*, *Vitriol*, and *Earth*, and being ſo ſoft and ſpungy, it's fit to abſorbe all into it's poors, even the groſſeſt *Accrimonious Salts*, and by the warmth of the Body, ſends out it's wholeſome Juices into the Blood, where it's mixt with, and enters on Motion, whilſt the more heavy metallic parts, give the Sizy depauperated, thick, ſlugiſh, Animal Juices a freſh *force* and greater *velocity* in *Circulation*. Thus are the moſt ſtuborn *Ulcers* healed, and Soundneſs reſtored to the parts, even ſome *Ulcerated Cancers* not excepted, where due Care has been

taken ſeveral times in a day, daily to remove the old, and apply freſh *Sludge*; and this all Chalybeats, containing only *Ochrous Earth*, have in common, only the more *Ochre* they contain, the better for this purpoſe, provided that it be rich enough in *Iron* and *Sulphur*. Hence ariſes the difference in Chalybeats, the more Ochrous, are beſt for outward uſe, and the more pure, clean and ſimple for inward, provided they are rich of the volatile ferruginous Spirit. 25 *Ochre* is the Recrement of Chalybeate Waters only, tho all contain not a viſible ſenſible *Ochre*, but ſome become ſuch only by an *Aura* of diſſolved *Vitriol*, where we can trace little or no *Ochre* in the Sediment, nor are ſome few Sediments without a ſcantling of *Ocbre*, where no Chalybeat principles was diſcoverable by *Galls*. The reaſon whereof we ſhall ſee afterwards. 26 On the other hand, the Earth of *Sulphur Waters* is moſtly *Calcarious* for if they contain *Ochre* alſo, they are both ferruginous and ſulphureous. Hence a difference between Ochry & Calcarious Earth, tho we find both to be Spungy, Porous, abſorbent and ſweetening, yet the firſt being poſeſſed of *Sulphur* and *Vitriol*, or of ſome parts of *Iron*, not only receive and abſorbe Vitiated morbific Salts from the Blood, but communicate to it other healthy reſtorative Principles, which the *Calcarious Earth* has not to beſtow, which may be a good Reaſon, why ſome Erruptions on the Skin, whether dry or moiſt, are apter to return, after being heal'd up by *Sulphur Waters*, than by *Ochry Chalybeates*; for the firſt cleanſe and heat, but leave no Correctors in the Blood, either to carry off the Leaven, or to change the *Acrid* into *Neutral Salts*, therefore the Diſeaſe regains ſtrength and repululates afreſh. 27 By comparing the Natural Hiſtory of theſe Waters with this Table, we find that the Earth left upon Evaporation, is of the ſame kind, with the Earth and Minerals, which the VVater waſhes in it's Subterranean courſe, and through which it's ſtrained to us. Ex: gr, a ſtiff ſtrong Clayie Ground, affords a Clayie Sediment: Chalk, Limeſtone, and alcaline Earth, a Calcarious Sediment. Iron ſtone, Coal, and Shale, Ochre; Gretſtone and Freeſtone, Stone Pouder; Sandy or Marly Ground, Sand or Marle. 28 That as far as we know none of the Earths, except Ochre, Alum Glebe, and Lapis Calcarius, give theſe VVaters Medicinal properties above common VVater. But either *Salts*, *Metals*, or *Semi Mettals* give them theſe properties. 29 That the Colour of no Earths or Sediments obtained by

Evaporation, is to be depended upon for genuine, except the Water was got very clean, and Evaporated on a Sand heat, in Glaſs or Porcelane Veſſels; for even a Stone or hard Mettal *Punch-boul* in which poudered Sugar had laid a few weeks, ſo altered the Sediment of a Water exhaled in it, that we could neither truſt it's Colour, Quantity, nor after Experiments, till we repeated the Operation with freſh Water in a Glaſs Veſſel, and found the Sediment vaſtly different from the other. 30 The heavier Chalybeates weigh, or the more Ochre and Sulphur they contain; the rougher and unpleaſanter they are to the Taſte, the fitter are they for outward uſes, becauſe they are externally more drying, cleanſing, bracing and ſtrengthening. 31. The greater Deſcent the Spring has before it appears, and the brisker it is, the better the Chalybeate. 32 The larger the Sediment is with *Galls*, the ſtronger but harſher Taſte has that Chalybeate. The leſs the Sediment, if of a fine deep Purple, the lighter, brisker, more palatable, & exhilerating is the Water. 33 The more opac or dark, the Mixture was with *Galls*, at firſt mixing, the larger the Sediment, the more ſtrengthening is the Water, but muſt be drunk in the ſmaller Quantity. The more tranſparent red, purple the Water is with *Galls*, the ſlower aſtringent and Bracer, but the more deobſtruent, exhilerating, lighter, diuretic, and of quicker paſſage it is, but muſt be drunk in a far larger quantity. Therefore five or ſix pints of *Aſtrope*, *Benthal*, *Croſsfell*, *Wellingburrow*, *Fullwood*, &c. Is not ſo large a doſe, as three Pints of *Malton*, *Cliff*, *Orſton* and ſuch other ſaturated Chalybeates. The firſt will alſo admit an Afternoon Pint, which is not ſo adviſable in the laſt. 34 The more Calcarious the Earth mixt with a Water is, the more alcaline and abſorbent; but the more rubric or rich ochre is in the Water, the more aſtringent, vulnerary healing and drying it is. 35 All Mineral Waters are not only more Spirituous and brisk at the Spring head, or when they run briskly, but they are more ſo in Froſt than freſh Weather, in a moderate drought, than during and immediately after long Rains; in cold than hot Weather; early in a Summer Morning, than after the Sun or Light has beat long upon them. 36 Theſe Waters turning ochrous, white muddy, or ſome how loſing their former Tranſparency, by taking up and ſtanding either in cloſe or open Veſſels, or in their own Receiver or Courſe, indicate the flying off or loſe of ſome volatile Principle, or Principles, which during it or their preſence was the Bond of union of the whole other Principles which being gone, the reſt of their own accord begin to Separate, and either ſwim in a ſcum, or ſettle in the Water; or it muſt be from the change of ſome one or other of the parts. 37 Great is the difference in the diſpoſition of the Salts to cryſtalize, ſome form, perfect regular Cryſtals in a Night or two, as *Cheltenham*, *Cliffton*, *Comnor*, *Arles*, *Holt*, &c. Others ſcarce in two or three Months, as *Hartlepool*, *Wiggleſworth*, *Cunliff houſe*, &c But this ſeems a Charactereltic either of moſt alcaline Nitrous Salts or it's the Effect of much Marine Salt with Nitre. 38 They not only differ as to the time of their Cryſtalization but as to the loſs of their parts; for as was hinted before, if you diſſolve, filter, and cryſtalize Vitriol a thouſand times over, you will find a reddiſh, brown, or greeniſh Earth left every time till the greateſt part of it turn to Ochre or rubric again. 39 Not only are ſome Salts brought to Cryſtalize ſlowly and difficultly, but ſome parts of ſome Salts not at all, as the Alum and Scantling of Vitriol in *Medbourn Holt* Spaw, which I could never bring to project perfect and regular Cryſtals of Alum, but alway downy and floccy like Feathers or Snow, ſo that it's not roch, but plumoſe Alum, nor does ever all it's Alum ſeparate wholly from it's Nitre. for the laſt is not only very bitter, but alſo rough and reſtringent. Nor have I yet met with any Mineral Water containing roch Alum. The Earth of Holt Water, is ſcarce any thing but Milk white Alum Earth, which ſtill taſtes as ſtrong of that Salt, as tho' Solution had diſſolved no part of that Salt, and the Lixivium has as ſtrong an aluminous taſte, as tho' it's Earth had parted with it intirely. 40 We have ſeen that *Sugar of Lead*, *Galls*, *Oyl of Tartar* &c. Precipitate only Earths, not Salts. And Galls Precipitate Iron and Ochre only yet if a Water is ſaturated with theſe, they carry down with them and diſcover ſometimes a little *Vitriol*, which is quite loſt either when the Sediment is ſmall, or conſiſts chiefly of Calcarious Earth, Stone Pouder, Sand, or Marle: therefore it's not the *Galls* that acts on this Salt, but the Ferruginous Earth. For if you take a Solution of *Sal Martis*, or *Copperas* &c. and put *Galls* to it, very little or no precipitation follows.

Having from a multitude of Experiments (tho' not enough for the largeneſs of the Subject) amounting we hope to a tolerable ſatisfaction, ſearched, diſcovered, and ſhown the principles impregnating thoſe

Waters; we ſhall now briefly give theſe which other Authors who have wrote on that Subject, have aſſigned them, that the Reader ſeeing the whole, at one view, may chuſe which he thinks moſt rational and conſonant to Truth. We have, beſides theſe Authors, the ſentiments of ſome other late worthy Gentlemen on ſome others of thoſe Waters, but their Tryals having been either for their own Amuſement or Satisfaction, or that of ſome private Friends, and ſo were never publiſhed, we have here omitted them, aud only given ſuch, as have been made publick before, The Revd: Mr. *Robiſon* Author of *the Natural Hiſtory of Cumberland* and *Weſtmoreland* has given us the Names of ſome Spaws, but no principles, only *Wardrew has Nitre, becauſe it ſtinks,*

Table 5th The Name of the Spaw. Col: 1 *The Authors Name.* Col: 2 *The Year when he publiſhed his work.* Col: 3 *The Principles with which he has impregnated or ſuppoſes it to be impregnated.* Col: 4.

Latham,	Borlaſe: Dr.	1670	Vitriol, Alum.
Durham,	Dr. Wilſon,	1675	Vitriolic, from an eſurine Salt Praying on a Minera of Iron.
Moffat.	Mr. Mc. Kaile,	1659	Sulphur, Antimony, Nitre, Sal, Armoniac:
Do	Dr. Plummer,	1733	*Sulphur, Copper, Salgemm, or Marine*
Leamington,	Dr. Guidot,	1690	Common Salt, & no little Nitre,
Bournley,	Dr. Leigh,	1700	Bitumen, Natron,
Hanbridge,	Do	Do	Natron, Volatile Natron, Bitumen or Natural Balſam,
Cartmall,	Do	Do	Sulphur, Sea Salt, Natron, Sal cathartic, amar: 2 ſorts of Lap: Sciſſilis.
Maudſlay,	Do	Do & 1693	Sulphur, Sea Salt, from Baſs or Shale,

Weatherſlac,	Do	Do	Marine & bitter Purging Salt,
Latham Stockport,			Sulphur, Vitriol, Ochre, Lap, Sciſſilis
Chorley Wigan, *Lancaſter,*	Do	Do	Marine Salt, bitter Purging Salt,
Ilmington,	Dr. Derhacn,	1685	Ochre, Vitriol, & a Neutral Salt,
Newnham Regis	Dr. Baile,	1582	Limeſtone, Nitre, Alum, Iron,
Do	Dr. Guidot,	1690	Salt,
Aſtrope Cliff, *Wellingburrow,* *Northampton,*	Mr. Morton,	1712	Vitriol, Nitre, Iron.
St. Eraſmus Well *Codsalwood,* *Willowbridge,*	Dr. Plot,	1686	Sulphur, Salt, a fine Oyl.
Cliffton,	Do	Do	a Salt he cares not to meddle with,
Deddington,	Do Oxford,	1676	Sulphur, Vitriol, Naphtha.

From this Diverſity of principles, maintained by ſundry Authors, to exiſt in the ſame Spaws, we ſee either the Indolence, or Prejudice of the Examiners; for a few plain, eaſy Experiments had brought them much nearer the Truth. 2 They often diſcover themſelves bad Naturaliſts, by running unneceſſary diviſions, as *Mars*, *Iron*, *Vitriol*, *Sulphur*, *Bitumen*, *Naphtha*, *Oil*, &c. 3 In impregnating them with imaginary principles, without conſidering whether theſe principles quadrated with their deſign, and the Effect of the Waters. Ex. Grs. becauſe ſome Waters are purgative, therefore they contain Alum, which in reality is the greateſt aſtringent Mineral Salt, therefore far enough from purging, till it firſt prove a rough Vomit; Another Water of Eminent in the Gout; by a Voluminous Writer on the Subject, muſt contain *Sal alcali*, *Nitre*, *Acid Salts*, *Sulphur*, *Freeſtone*, *Marle*. *Ochre*, *Iron*, *Lapis Calcarius*, *Bituminous Foam*, *Clay*, *Sand*, *Sulphureous Nitre*, a *Mature fixt paſſive Salt*, an *immature active and volatile Acid*. A ſtrange *Farrago* of principles mixt in the ſame Water. And ſurprizing, becauſe its proper in the Gout, it muſt have both a fixt & volatile acid Salt in it. 2 other Gentlemen, becauſe the ſame Water ſits light & eaſy on the Stomach, and goes quickly out of the Body, and is ſovereign in the Gout, therefore it contains *Marcaſites* and *Copper*. whereas we have no Metal that gives the Stomach more uneaſineſs than *Copper*, if taken in any quantity. 4 Some have got a dexterous Knack at feigning unnatural Bodies, as *Tartar Vitriolatum*. *Sal Armoniac*, *Liquid Amber* &c. 5 Some judged of the Virtue of Waters from the Multitude of their impregnating Principles, therefore they are reſolved that the Reputation of the Spaw ſhall not ſuffer for want of a variety of Principles. but when we are ſatisfied of both the number, and kinds of Natural Salts, we have no more to look for when we know the volatile parts, and how eaſily they are diſtinguiſhed, It's in vain to ſearch for more; and ſhould there be ten thouſand kinds of Earths, yet whilſt only two or three of them have any Salutary Effects, as far as we know, the reſt are of little account to us, except we can find their uſes. 6 On the contrary, ſome having their purpoſe to ſerve, or paſſions to Gratify, with them, *Scarburgh*, ſhall have only a dirty *Gritty Stone Pouder*, *Malton* ſhall have *Alum* enough to deſtroy *Whitby Alum works*, but no Earth or Stone Pouder; *Knarsburrow Dropping Well*, ſhall contain all Salt at the Spring head and no Earth, but at the rock it's all Earth and no Salt. *Harrigate* ſweet Spaw muſt only have ſome *Nitre*, but no Earth or Ochre at all &c. 7 Some again will have Waters impregnated with Principles highly inconſiſtent with the conduct and deſign of providence, *viz*. The Health and recovery of Men, as *Arſenic*, *Orpiment* &c. 8 We find ſome aſſerting the Effects of Experiments they never tried, Ex. gr: that when *Spirit of Hartshorn* turned a Chalybeat muddy, and let fall a White precipitation, *Oyl of Tartar* clear'd it again, and that the ſame VVater weigh'd above two Ounces and half in a Pint lighter than common VVater. and that another ſimple Chalybeate is a Sulphur Spring. 9 Others to make ſhort work with it, to conceal their

Indolence, Ignorance, or prejudice, cover all with the excuſe of an Impoſſibility to ſearch out and diſcover the ſanative principles in Mineral Waters; and their Effects tho' never ſo various, can never be accounted for, nor can any Patient know whether the Waters are good in his caſe, till he try them ſome Months. Indeed to cut, is the eaſieſt way to untie *Gordian Knot*; and perhaps this is the only excuſe Ignorance, Idleneſs or Conceit can produce: Either theſe Waters muſt produce their Effects as meer Common Water, or as Water impregnated with ſome Mineral principles, or as Water without any mixture, but acting above and beyond Nature: If they are for the laſt, then every Cure produced by them beyond the Reach of Common Water, muſt be acknowledged to be a Miracle, or a dayly Exertion of the Divine Power above the preſent Eſtabliſhed Laws of Nature; which I ſuppoſe few will be willing, or weak enough, to plead. If from Common Water, conſidered ſimply as ſuch, tho' we are ready enough to own the Salubrity of it, yet we cannot aſcribe to it Effects contrary to it's ſelf, as in removing or leſſening the Agonies of the Gout in the decline of Life, curing habitual flatulent Colicks, or a Diarrhea from a meer Relaxation of the inteſtines, it's inward uſe to reſtore a worn out ſcropholous habit; or how come ſuch Waters to us with a different Smell and Taſte? How come they to produce different Effects upon our Bodies, in ſo ſmall a quantity, or upon Exhalation to afford us parts different from Common Water either in Quantity or Quality? If they are Water impregnated with Mineral principles, then theſe muſt be either volatile or fixt, if the firſt, they are perceptible by our Senſes, if the laſt we have ſhewn Methods enough to bring them out, & ſubmit them to the Examination of both our Senſes & Judgement. There are another ſort of Gentlemen, who will have every Mineral Water to be a Panacea, or univerſal Cure of all Diſtempers. But theſe we have ſufficiently refuted in both Volumes. Nor muſt ſuch be overlook'd, who fancy ſome Minerals to be poſſeſſed of moſt extenſive Benefit, and therefore be ſure they muſt be in their Water either by Imagination or Reality, it's all one, whether inveſtigable or not, they muſt be there; but then I would have it to be ſo to themſelves; for their Faith, I am afraid, will cure few other peoples Diſeaſes.

N. B. Eff. *Stands for* Efferveſſence, F. *for* Foamed, Gt. *for* Great, Fer. *or* F. *for* Fermentation. Pr. *for* Brown. Gr. *for* Green. L. *for* Light. Bl. *for* Black *or* Blackiſh. Yell. *for* Yellow. R. *for* Red. P. *for* Purpliſh. &c.

Table 6th	Solut: Argenti		Ol. Vitrioli		Spiritus Salis,	
Spaws,	Earth	Salt	Earth	Salt	Earth	Salt.
Diſtill'd Water.	o	o	o	o	o	o
Aſtrope,	f	Purple	Eff. f.	fer. f.	fer. gt.	o
Dudley,	o	o	o	o	o	
Moreton ſee Pump,	fer.	Purple	Eff. gt.	ſmall fer:	f. very gt.	o
Do. *Chalybeat,*	fer.	Purple	Eff: gt.	fer. gt.	gt. fer:	o
Dinnington,	fer.	Purple	Eff gt.	fer, gt:	gt. fer.	o
Gilſland,	fer.	o	Eff. gt.	f. gt.	f. gt.	f.
Malvern'd Well,	d: Blue	Yell.	Eff. gt.	o	f: gt:	o
Cliff,	fer:	Yell. Pur.	Eff. f.	fer. gt.	fer. br.	o
Willenhall	Do	Purple	Eff. gt	f. ſmall.	fer. gt.	o
Tarleton,	Do	Do	Do	fer. gt.	Do	o
Newnham Reg.	Do	Purple.	Eff. f.	o	fer. gt.	o
Cartmall.	Do	o	Eff. f.	fer. gt.	fer. gt.	o
Wigglesworth.	fer.	Greeniſh	Eff. ſmall	fer. gteſt.	fer. little	fer. ſtrong
Cunleyhouſe.	Do	P.	Eff. ſmall	Do	fer. little	fer. ſtrong
Holt L.	o	P.	o	o	o	o
Hartlepool	Do	o	Eff. gt.	fer.	fer. red	o
Comner	Do	P.	Do	Do	fer. little	br. o
Coventry,	fer.	Yel.	Do	fer. f.	fer: gt	o
Cornwell,	fer:	P.	Do	f: ſmall	fer: gt	o

Mariale

Syr:	Violar.	Pulv:	Gallar:	Campeche.	
Earth	Salts	Earth	Salts	Earth	Salts
Blueiſh	Blueiſh	Whitiſh	Yel:	Red,	clear red
Greeneſt	o	o	Yel:	Mulbery,	Red
o	o	o		Graſs green	
Greeneſt	o	Do	Yel:	Red,	Red
Greeniſh	Greeniſh	Do	Green	Red,	D. Red
Green	Greeniſh	o	G:	D: Red	Red
Greeneſt	Blueiſh	o	Yel:	Crimſon bl:	Rediſh br.
Green	o	o	Yel.	Red	Red
Green	Blueiſh	muddy	Yel.	br: Sedimt.	Red
Green	gr: iſh	muddy	Yel.	d: Red	Red
Greeneſt	o	Do	Yel.	Do	Reddiſh
Green	o	Clayie	Yel.	D. Rediſh	Red
Greeneſt	o	Do	Yel.	Red: R: Br:	R: Br.
Dr: Green	Yellow	Do	Y: R:	Bl. br.	D. Red Olive,
Dr. Green	Saffron	Muddy	Yel:	Bl. br,	D. Red.
Greeniſh,	Blueiſh	clear	Yel:	Sack Sed:	
Green	Whitiſh	Clayie	Yel,	Red b. br.	D. R: Br.
Green	Blueiſh	Do	Yel:	Red	Red
Green	Do	Do		bl. br.	
Greeneſt	Blewiſh	Do		blood R.	Red.

Muriale,	Do	P.	Do	o	fer. gt,	o
Cheltenham	Do	P. iſh	Eff. f:	fer:	fer. gt.	o
Moffat	Do	o	Do	fer: gt	Do	o
Kinalton	Do	P	Do	fer: ſmall	fer: ſtrong	o
Kirby thore	Do	P	Do	fer: gt.	fer: ſtrong	o
Leamington,	Do	o	Do	fer: little	fer	o
Caergyrle,	Do	o	Do	fer. gt.	fer. ſtrong	o
Weatherſlac,	Do	o		Do	Do	o
Darby,	Do	Greeniſh	Do	f. ſmall	fer.	o
Cliffton,	Do	P.	Do	fer:	fer. furious,	o
Benthall			Eff. f.	f.	f. gt.	o
St. *Ers. Well*	Do	o	Do	fer. ſmall	Do	o
Immature	Vitriol	Greeniſh	o	o	o	o

Having obſerved the Difference among thoſe Waters by Colorations at the Springs, and then, by Evaporation ſeparated the fixt parts from the Vehicle, and laſtly by Solution and Filtration, parted the Earth from the Salts, I imagined it might give new light into the Subject, to repeat the ſame Experiments on the new ſeparated fixt parts, to find whether theſe changes of Colour aroſe from the Earths or Salts, or both united. But ſuch as would imitate this to any ſatisfaction, or advantage, muſt not obtain their Sediments by boyling away the Water in Iron Veſſels, or over a Smoaky Fire, or in a dirty Chimney, or Burning ſuch Fire as affords much light Aſhes, the *Lixivium* muſt be very clear, It's Water often boyled away, diſſolved in freſh, and filtred again, before it's ſet to Cryſtalize, thus the Cryſtals will be

Greeneſt	o	Do	Yel.		C. R.
Greeniſh	o	o	Yel.	Red	Red
Green	Whitiſh	o	Yel.	Red	Cowſlip
Green	Pearl bl.	Do	Yel.	D. Red	Red
Green	Blueiſh	o	Yel.	Red br. Red	D: bl. br.
Green	o	o	Yel.	Red	Red
Very Gr.	Greeniſh	Clayie	Yel.	R. L. Br.	Reddiſh Br.
Green	Blueiſh	Do	Yel.	Bl. Br.	Red.
Green		Clayie		Red	
Green	o	Do	Muddy	D. Red	Red
Greeniſh	o	o	Yel.	br. Sed:	Clear Gr.
	Blueiſh		D B:	Purple	Mazarine Bl:

clear, fine, and ſuch as will ſtand in the Air. The Water uſed in the following Table, muſt be diſtill'd, and ſtand after till it has loſt it's Empyreumatic Taſte. The Knife for taking up the Earth or Salts upon, & Stirring the Mixtures, muſt be of Bone, The Plane & Pencil uſed for mixing the Salts or Earth with the Spirits, muſt be of Glaſs. The Mixtures with Water muſt ſtand at leaſt three or four Nights in the Glaſſes, and their changes during that time well obſerved two Grains of Salt or Earth, to each Experiment, half an Ounce of Water, or three or four drops of Spirits, is ſufficient.

The ſame Tryals were made upon many other Earths and Salts, as *Binley*, *Wellingburrow*, *Sephton*, *Moſs houſe*, *Stockport*, *Coventry*, *Deddington*, *Oxford* new Well, *Shiphnall*, &c. But no difference from theſe in the Table. From the whole we obſerved. 1 That tho we uſed Spirit of *Hartshorn* to every one, as well as the acid Spirits, yet it cauſed not the leaſt *Ebulition*, or *Change of Colour* in any one, therefore it's ommitted in the Table. 2 That of all the four Acid Spirits, *viz.* *Aq: fortis*, or *Solution* of *Silver*, *Spirits* of *Salt* and *Vitriol*, *Oil* of *Vitriol*; *Spirit* of *Salt* acted with the greateſt, and even Violent *Fermentation* on the Earths, not only to Swell, Huff and Bubble, but in ſome to Crackle, Fly, Smoak, Heat the Glaſs Plane, but almoſt take Fire, as *Kirbythore*, *Congleton*, *Cliffton*, &c. 3 Such as fermented not with this, tho' they made not the leaſt Efferveſcence with Alcalies, yet approached ſo near an Acid, that the Earth in diſtill'd Water, turned of a Yellowiſh Green with Oil of Tartar or Spirit of Hartshorn, as *Duddley*, *Millars Spaw* *Stockport*, *Preſcod*, *White Nabbs* &c. 4 Hence we ſee that the nearer any Water approaches to an Acid, the more it changes *Greeniſh*, or *Green*, with *Oil* of *Tartar*, tho' it neither alter the Colour of *Syrup* of *Violets*, nor makes the leaſt *Ebulition* with it, or Spirit of *Hartshorn*. 5 The moſt of theſe Earths, when their *Fermentation* with *Spirit* of *Salt* is over, turn of a Greeniſh or Green colour but with *Oil* of *Vitriol* of a Browniſh, Brown, Reddiſh or Red colour. 6 However furiouſly *Spirit* of *Salt* may ferment with the Earths, yet it affects very few of the Salts, except they have ſome ſeparable Earth ſtill remaining in them; but it moves none of the pure Cryſtals, except *Wigglesworth*, and *Cunley houſe* with whoſe Earth is made a moſt violent Fermentation. 7 From this Table we ſee, that the *Ebulition* raiſed in a Mineral Water by this Spirit, is rarely from it's Salt, but moſtly from it's Earth. 8 From the uſe of theſe Acids, we have an Opportunity to know which of all theſe Earths is moſt alcaline. 9 Several of the Earths when *Spirits of* Salt and *Hartshorn* had been ſeparately drop'd on them, then mixed, were of a light or dark brown Colour. 10 The *Fermentation* of the Earths with *Oyl of Vitriol* was very different from that with *Spirit of Salt*, being neither ſo high nor ſo quick, without Crackling, Flying, Hiſſing or Bubbling, only a gentle huffing up into a great browniſh white foam: 11 Some Earths made a ſmall Efferveſcence with *Oil of Vitriol*, but were not affected by *Spirit of Salt*, as *Stockport*, *Preſcod*, &c. 12 Tho *Oil of Vitriol* fermented not with any of the clear cryſtalized Salts, except gently with Marine Salt, and ſent out a ſtrong urinous ſmel, yet with *Wiggleſworth* and *Cunleyhouſe* Salt, quick and impetuous was the fermentation. Hence 1 We find that the more any Salt ferments with *Oil of Vitriol*, and the acid Spirits, it projects it's Cryſtals with the more Difficulty and tedioufneſs, and ſometimes can hardly be brought to Cryſtalize in the open Air, out of a Sand heat, being ſtill more diſpoſed to deliquate into an Oyl, like Oil of Tartar, or in other Words ſuch Salts attract the particles of Water in the Air more powerfully, than the particles of Salt in the *Lixivium*. 2 Hence appears the true Reaſon why ſeveral *Lixiviums*, being equally ſtrong of Salts, ſome ſhall project their Cryſtals much ſooner, and more perfectly than others for the more alcaline any are, the longer will they be in cryſtalizing, or the more neutral, or the nearer they approach to an acid, the more quickly and perfectly will they cryſtalize, and the longer and firmer will they ſtand in the open Air; as we ſee in *Vitriol*, *Alum*, *Nitre*, *Marine Salt*, *Salts of Tartar*, *Pot Aſhes*. *Wormwood*, &c. 3 Some Waters we ſee afford a real *Alcaline*, and kind of *Lixivious Salt*. 4 The Earth of many Waters may be highly Alcaline, and their Salts Neuter, or their Salts may be highly alcaline, (tho not Marine) and their Earth very little ſo. 13 Any of the Salts being mixt with *Oil of Vitriol*, and *Spirit of Hartshorn*, were of a Dark Reddiſh Brown Colour, from thoſe Principles of Iron they contained *viz*, *Earth* and *Vitriol* 14 As Solution of Silver with diſtill'd Water, affects not the colour of any of thoſe Earths got by Evaporation, on a Sand heat, in Glaſs or Porcelane Veſſels, except the Water contained *fixt Vitriol*, ſo the ſame Solution affects the colour of none of the Salts, except *Nitre*, which after ſtanding two or three Nights, always becomes more or leſs of a lighter or deeper Pearl Blue, Purpliſh or Purple Colour. 15 As to *Syrup of Violets*, it turns Greeniſh or Green with both Earths and Salts, but moſtly and chiefly with the firſt, for no pure Cryſtals of natural mineral Salts, except Marine, turn it Green; but it lays hold on the leaſt Earth mixt with the Salts, and turns Green, otherwiſe it's of a Pearl Colour or Blueiſh. Only *Weggleſworth* and *Cunleyhouſe* Salts (which in all Experiments we ſhall find to differ from the reſt) turn Yellow, but ſoon faded. 16 Tho *Galls* promiſed much whilſt the fixt parts were united with the Water before Evaporation, by turning Green after two or three Nights ſtanding mixt with Nitrous Waters, yet, the Salts and Earth being ſeparated, they ſeem to loſe that property. for tho the Salts diſſolved, ſtood 5 Nights in diſtill'd Water with pouder of *Galls*, yet the Reſult was moſt of them were Yellow, as well Nitrous as Marine, only if not got ſo cleanly, they were an opac black with a thick Green Scum, but when Diluted, were of a deep Green. *Wigglesworth* was of a Yellowiſh Red, all the reſt of a rich Cowſlip Wine Colour, or of faded Tincture of Saffron, ſo that the Green with *Galls* ſeem to be the Effect of the natural Mixture of the Nitrous Salts and Earth with the Water. Some of the ſmaller Chalybeates which contained a more ponderous *Vitriol*, the Mixture was Brown or Reddiſh Brown. 17 *Logwood* affords the greateſt variety of Colours with both Earths and Salts, of all the reſt, for with ſome it's a *Pinkred*, with others a *Cherry* a *light Red*, a *Deep*, or *Mulberry Red*, or *Reddiſh Brown*, or *Brown*, or *Sack Colour*, or *Olive*, or *Purple*, or *Black*, ſome *Curdled* and *Precipitated*, but the greateſt part did neither, each colour went through ſeveral ſhades by ſtanding, tho' all faded. Therefore could all the Sediments from Waters be obtained after the ſame manner, no Article could give greater light into the variety of Earths and Salts impregnating theſe Waters. But it is ſo tickle a thing, and it's ſundry ſhades depend on ſuch a multitude of little trifling Accidents, that it is often uncertain.

There were alſo ſeveral Experiments on the Earths by *Calcination.* For 1ſt pouder'd *Galls* were put in a Crucible, and ſet in a ſmelting Furnace with a double Blaſt. The pouder burnt away to a ſmall white Earth which neither tinged Chalybeat Waters, nor was affected by the Loadſtone. In a 2d Coucible was put *Scarburgh* plain Earth, in a 3d *Scarburg* Earth out of whoſe Water the Steel was ſtruck. In a 4th *Malton* Earth without the Steel In a 5th, 6th, and 7th *Malton*, *Scarburgh*, and *Hartlepool* Earths with the Iron fixt in them. In an 8th *Durham* and *Wiſſingham* with the Steel. In a 9th *Cliff.* In a 10th Sundry Salts belonging to the Earths with the Steel fixt. They were all continued in that violent Heat a quarter of an hour. The Reſult was, the Salts in the 10th Crucible boyled furiouſly; flamed much, and were moſtly conſumed in the fire, but were forced from the Gum of the *Galls* which hindred their cryſtaling before all the Chalybeat Earths, whoſe Iron had been fixed in the Water with *Galls*, burnt a little with a bluiſh Flame and ſtunk intolerably ſmelted, and ſeveral of them cruzzled together in a hard Cinder like Charcoal, which, when poudered, the *Magnet* attracted of it briskly. But on the duſt of the plain Earths out of which the Iron was ſtruck, it acted not, and but very dully on theſe whoſe Waters were evaporated without addition of *Galls*. *Oil of Vitriol*, or *Spirit of Salt* drop'd on the calcined Sediments, in which the Iron had been fixt, fermented furiouſly. But put on theſe without the Steel, it amounted only to a brisk Effervecence. The pouder of the firſt of theſe Earths turned *Syrup of Violets* a deep Graſs green, with *Galls* a muddy white or clay colour, with *Logwood* bright red. The laſt with the *Syrup* was greeniſh; with *Galls* a deep reddiſh brown; with *Logwood* bluiſh or blackiſh ------ I forgot to obſerve before, that in looking through moſt of the Glaſſes with Solutions of Nitrous Salts, and Solutions of Silver, they ſeemed of a pearl colour, but ſet down and looking over them, they were of pale purple or bluiſh colour. Violent was the Fermentation of *Wiggleſworth* Salt with this Solution, even to taking Fire; *Holt* Salts were of a deep purpliſh blue with it. What ever Salts Fermented with the Acid Spirits the ſame they did with the Solution.

We took alſo ſeveral of the Sediments, precipitated by *Galls*, out of Chalybeate Waters, mixed them, and divided them into two parcels, on one I pouer'd weak Spirit of Vitriol, the ſame weight as there was of Sediment, and after 24 hours ſtanding. filled up the Porringer with Water. On the other half pouered ſeveral times boiling Water, I poured off and filtred both, boiled them up to a Lee, and ſet it to Criſtalize. the Event was, that both afforded immature Vitriol, and no other Salt, ſo that we ſee it demonſtrated. 1 That Chalybeate Waters contain both Iron and Vitriol in the Iron Earth. 2 That theſe two principles thus united may he fixt ſeperated and obtained from theſe Waters, and brought under Examination, as well as the other fixt principles. 3 Experience proves that where they are nor fixt, they are ſoon loſt, or evaporate out of the Water, both as to their Effects, our Senſes, and Experiments.

Finding it a generally received Opinion, that all Acids, even of the low vegetable Tribe, would *with Calcarious Earths*, or *Petrefactions*, produce a *Nitrous Salt*, or all ſuch Earths might by this Managment be converted into *Sal Calcarium.* In *July* and *Auguſt* 1735 I made the following Experiments on a few ſuch Earths and Petrefactions, with *Spirit of Vitriol*; which I have thrown into the following ſhort Table, where Column 1ſt Gives the place from whence the Earth or Petrefaction came. 2 The quantity uſed in each Experiment. 3 The Weight of Spirit of Vitriol poured on each. 4 The Weight of the dried Earth left, after the Humidity of the Spirit and Water was ſpent.

N. B. *Each of theſe Mixtures when they had ſtood* 48 *Hours with Spirit of Vitriol alone, had Water poured on them, ſtirred well about, and were let ſtand two Days till they cleared, then the clear was pour'd off and filtred, then exhaled on a* Sand *heat to a little, ſo ſet by to ſee what ſort of Cryſtals they would project Col: S: 5th 6th and 7th The Colours of the Supernatant clear Liquor with* Galls, Syrup *of Violets and Logwood Tinctures.*

	Grs.	Grs.	Grs.			
Peaks hole Petrefactions.	240	600	330			
Quicklime.	240	720	480			
Matlock Petrefactions.	720	780	1440			
Poles hole Petrefactions,	240	600	330	Bluiſh	Black	opac Black
Dropping Well Petrefactions	480	780	720			
Limeſtone Shells.	360	780	480			
White Sparr.	240	780	660	Bluiſh	Purple	Mazarine.

Matlock

Matlock Spongy Petrefactions.	240	660	360	Bluiſh	Peasbloom	Blue.
Strong Red Clay,	240	310	450	Bluiſh	Black	Blue.
Matlock Sludge,	360	440	360	Bluiſh	Purple	Blue.
Dried Reſiduum of Matlock Petrefactions. Wt: Spt. Sal:	240	240	130	Bluiſh	Purple	D: Blue
Dried Reſiduum of Snakebed & Spt. Sal:	180	180	130	Bluiſh	Purple	Blue
Matlock Sludge with Water only.				Bluiſh	Purple	Blue

Theſe *Stalactitious* and *Calcarious* Earths I pitch'd upon, as the moſt alcaline, and likely to anſwer, and to them I joyned ſome Tryals on mixt and Ochrous Earths, all were well Poudered and Siſted. I took alſo a piece of hard Brown *Calculus Humanus* pouder'd, but it fermented not with Spirit of Vitriol, neither did Pouder of Baſtard *Briſtol* and *Buxton Diamonds*, tho' the laſt Stunk intolerably. The *Matlock* Brown Spongy Petrefactions ſeem'd intirely to diſſolve. The Dropping Well Petrefactions Stunk much.

Here obſerve 1 That *Marine Calcarious Earths*, and *Petrefactions*, are both more alcaline and Sulphureous, than the *Land ones*, for I tried ſeveral others not mentioned in the Table, they all Swell'd, Smoak'd, and Bubbled more intolerably than the reſt. -------- 2 Of the more *Simple*, *Pure* & *Solid* parts, any *Petrefaction* conſiſts, the leſs it ferments, and ſooner it's ſated with *Acids*, as in the *Baſtard Diamonds*, *Sparr* &c. On the contrary the more Porous, Spongy & Alcaline the Petrefaction is, the greater It's Fermentation, and the more *Acid* it drinks up, before it become neutral; for all theſe *Earths* and *Petrefactions*, had Spirit of *Vitriol* pour'd upon them ſlowly, & at ſeveral times, till they ceaſed to ferment, and the Spirit had quite loſt it's *Acidity*. -------- 3 That all *Petrefactions* are not alcaline, as

the

the *Pyrites*, *Diamonds*, this *Calculus humanus*, &c. —— 4 That becauſe a Mineral Water turns not Purple with *Galls* or other Aſtringents, or Blue with *Logwood*, therefore it is no Chalybeate, is too raſh a Concluſion: for the *Matlock* Sludge, and Brown *Honey-Comb* like Petrefactions, (with which this Spring head abounds, and through which it's Water is Strain'd) are both the product of the Water, and yet it's Seldom that *Galls* ſtrike it viſibly Purple. —— 5 That ſuch *Petrefactions* as abound moſt with *Vitriol*, by being mixt with only equal parts of a true Calcarious petrefaction, their Tinctures ſtrike not Purple with *Galls*, when Spirit of *Vitriol* is added; we ſhould not then aſſert, that all Waters which ſtrike not Purple with aſtringents are deſtitute of Steel, nor have we ſufficient Grounds to infer that Chalybeat Waters, which have ſtood ſome time open after they were taken up, have their Steel exhaled, becauſe they turn not Purple with *Galls*, when the *Iron* may only be abſorbed by the Calcarious Earth. —— 6 Neither do Calcarious Earths or Petrefactions loſe of their Weight, by Addition of *Acids*, but gain much, for when the clear Water was pour'd off the above Pouders, and the laſt, ſet to dry well, the whole had got ſome Ounces in Weight. *Corrol*: 1. Hence is evident the *Poroſity* of *Calcarious* Bodies. 2 The Diſpoſition of *Vitriolic* Bodies to be joyned or attached to them, as alſo the ſubtleneſs or minuteneſs of *Vitriolic* Particles beyond the *Calcarious* 3 That a *Fluid* imbibed by a *Solid*, ſhall it's ſelf become a ſolid, and conſtitute a more hard ponderous Body, than the Solid it ſelf was at firſt. 4 That *Volatile* Matters may be fixt by earthy, and theſe two united form a third Body of a *Mixt Nature*. 5 That an *Acid* or neutral body may be latently, or inviſibly, inherent in one Alcaline, and not always loſt or exhaled, as is generally believed. 7 That the *Reſiduum* of *Matlock Petrefaction* with Spirit of *Vitriol*, tho it ſtruck not Purple with *Galls*, nor gave the leaſt Indication of *Vitriol*, tho' it had imbibed ſo much of it's Spirits, yet when dead Spirit of Salt was pour'd upon it, the Water on it turned Purple with Galls, and both *Vitriol* and *Marine Salt* were regenerated, the firſt was immature, the laſt mature in large quantity, the ſame I tried with ſeveral of the other *Reſiduums* with the like Succeſs, and the *Reſiduums* had loſt of their Weight.

Natural and Medicinal Inferrences.

1 Here ſeveral different Salts lodging and exiſting in the ſame Maſs ſeem one homogene Body, yet are ſeparable with very little Art or Labour, ſo as to diſtinguiſh themſelves. For when all thoſe poudered Petrefactions were infuſed two Days, in Spirit of Vitriol, and had Water poured on them, and put off, ſundry times, then the different Waters filtred and boyl'd up to a Lixivium, & ſet by to cryſtalize, at ſix Weeks end (for all this Summer was very wet, and improper for Experiments of this ſort) when their Humidity was evaporated; the Calcarious Petrefactions left only a little White Duſt or Earth, but no viſible palpable Salt; this Duſt, however, was carefully Waſhed out of all the Tea Cups with diſtill'd warm Water, then filtred, boyled to one Lixivium, and ſet by to try whether from the whole there was any fixt Salt to Cryſtalize, after long ſtanding, there remained two or three very ſmall Cryſtals of true Sal Calcarium; which very likely might have been obtained from thoſe petrefactions alone, without addition of the Acid; for the whole exceeded not 10 Grs. the Brown Spongy *Matlock* Petrefactions alone (without *Spt. Vitriol*) left very much Salt, chiefly *Nitrum Calcarium*, and ſome *Vitriol. Scarburgh Cliff Clay*, and *Rubric*, afforded much immature Vitriol, & about a 3d Part Nitre. That this Vitriol was not produced by Affuſion of *Spirit of Vitriol*, was plain. 1 Becauſe, tho the Calcarious Petrefactions had much more of the acid Spirit pour'd on them than the Ferruginous had, yet they produced no *Vitriol.* 2 Becauſe the ſame petrefactions, by being only poudered and infuſed in warm diſtill'd Water, gave a Lixivium productive of *Vitriol*, without Addition of any *Acid Spirit*. Theſe laſt Petrefactions appeared only Earth to the Eye; but upon ſeparating their parts they contained both Earth and Salt; and tho' theſe Salts did exiſt together, in their natural compound Maſs, as one Salt, yet when ſeparated from their Earth and mixt only with diſtill'd Water, when that was near evaporated, they would no longer unite, but ſeparated and formed different Cryſtals, whoſe particles both when compounded with Earth, & mixt with Water, had exiſted ſeparately, and each was endowed with, and (when the interpoſing Bodies of Earth and Water were removed) exerted their attractive and reſpective powers, For as the *Vitriol* attracted *Vitriolic Saline* particles, ſo it repelled the Nitrous, which as they

attracted one another repelled the *Vitriolic* Particles, which lay between them We find they have not only their different *attractive Powers* but thoſe powers in different degrees, the *Vitriolic* Cryſtals being formed ſome Days before the *Nitrous* began to coaleſce; therefore the *Vitriolic* particles both act with a ſtronger force, and at greater diſtance than the *Nitrous.* And as the *Nitre* did not begin to Coaleſce or form it's Cryſtals, till the Cryſtalization of the *Vitriol* was almoſt over, therefore *Nitrous* ſaline particles do not act at a great Diſtance, or till they are very near the points of content. After I had extracted the Salts from the Earths by ſimple water only, and cryſtalized them; I dropt ſome of the *Acid Spirits* on each of the Cryſtals ſeparately, but not the leaſt *Fermentation* enſued; but the mildeſt of the ſame Spirits poured upon the Earths, a violent conflict followed. Hence it's demonſtrably plain that this Alcaline property exiſts not in the Salts, nor in the Earth and Salts taken together, but in the Earth only *Spirits of Hartshorn*, and *Oil of Tartar* drop'd on Earths and Salts ſeparately, made not the leaſt *Ebulition* with either, therefore it's plain theſe Salts are neutral, and of the ſame ſort with theſe produced from Mineral Waters.

Since *Affuſion* of *Acids* upon *Alkalies*, till the *Ebulition* ceaſes, and both become a neutral Body, i. e: a ſubſtance neither *Acid* nor *Alcaline*, this ſhows us the uſe of *Acids* in Medicine, to conquer diſeaſes ariſing from *Alcaline* Humours, and likewiſe the deſign of Alcaline or Calcarious Earths in thoſe Waters, *viz* to anſwer the intent of abſorbent, ſweetening Medicines, to ſheath the ſharp, pricking, wearing and tearing Animal Juyces, which purpoſe is highly promoted, and facilitated, by pouring a quantity of Water into the Blood, whoſe particles being ſcattered in that Red Juyce, will keep the ſaline particles at greater Diſtance, and lay open the Earthy Particles of the Water on all ſides, ſo as all their pores may be filled with thoſe acrid Salts; whilſt, at the ſame time, the Nitrous Salt in the Water, cools the Kidneys, prevents Spaſms or Contractions of their ſtraining Tubes; and the quantity of Blood hereby, being both Cooled, thin'd and encreaſed, it arrives at the Kidneys in a larger even current, which now receive it, and ſtrain off the Urine more plentifully, and with it the Salts and Earth in the Blood. *Corrol:* Since *Nitre* acts thus powerfully upon the *Kidneys*, and the *Urine* contains much

Sulphur, and the *Alcaline Earth* in the Blood is ſtrained off by the *Kidneys* ſaturated with *Acrid Salts*, I ſay ſince *Nitre*, *Earth*, and *Sulphur* meet all here chiefly, and theſe ſeem to be the only Principles of Petrefaction, hence ſome Danger to Conſtitutions diſpoſed to ſtone and Gravel, Danger I ſay, from plentifull drinking of Waters loaded with Alcaline Earth, hence it is that very often ſuch Drinkers, have a fit of *Stone* or *Gravel*, on the uſe of thoſe Waters, tho' they never knew it before, but how much greater is the danger, to thoſe who are previouſly diſpoſed to breed *Stone*, *Sand*, or *Gravel*?

Since a ſmall quantity of *Alcali* requires ſo much *Acid* to bring it to a *Neutral State*, and ſo much *Acid* is corrected by a little *Alcali*, then muſt Diſeaſes ariſing from an alcalious humour, be of much more tedious Cure, than thoſe ſpringing from Acids, and ſince theſe Salts ferment neither with Acids nor Alcalies, they ſeem intended to correct neither, but to attenuate, break, cut and mix with the Water the ſizy Fluids, and ſtimulate the ſluggiſh Veſſels. *Corrol*: Since *Petrefactions* conſiſt chiefly of *Alcaline Earth*, ſeldom of *Neutral* & never of *Acid*, then all unnatural Concretions of *Stone*, *Gout*, *Tophaceous* ſubſtances &c. May be the product of an *Alcaline Humour* in the Fluids; does this indicate the uſe of *Vitriolic Chimical Acids*, as a partial, or total, prevention of thoſe Diſeaſes, before they have ſettled and form'd Obſtructions in the ſmall Veſſels to the impairing their Spring and Vigour? We obſerve ſomething like this in Obſtructions of the *Abdominal Viſcera*, and why not for thoſe of the Kidneys and Bladder and extream parts of the Body? Since ſuch *Alcaline Concretions* depend upon a ſlow Circulation of the *Fluids* in the Capillary Veſſels chiefly; and before they are formed, it's neceſſary that the more thin and Watery parts be ſtrain'd off, and the groſs and earthy left behind; then whatever preſerves the due thinneſs of the Blood, and keeps the ſmall Veſſels full, muſt be a preventative of thoſe Concretions, and this a draught of tepid Water drunk every Night at Bed time offers fair for, in healthy Bodies.

Moſt of the Abbreviations of this Table have been explained before as L. *for* Light, Sed. *for* Sediment, Pur. *for* Purple, Gr. *for* Green *or* Greeniſh, Yel. *for* Yellow *or* Yellowiſh, Br. *for* Brown *or* Browniſh, Bl. *for* Black *or* Blackiſh, P. *for* Pale, Op. *for* Opac *or Dark*, D. *for* Deep *or* Darker, Curd. *for* Curdled, S. *for* Smal. Ol. *for olive* &c.

Feb:

Feb: 8 pt. 1ſt Salts	Marine	Gemm	Borax
Green Goats Rue			
Green C: Wormwood,			
Green Pellitory of the Wall,	D. Green		
Green Dandelion,			
Green Walnut tree leaves,			F: Red,
Green Salary leaves,			
Dry R: Wormwood,			
Dry Ebulus Leaves,			Dr. Brown
Dry Deadly Night ſhade,			Dr. Brown
Dry Oak Leaves,			
Green Pem Ferm,			
Green Bilbery Leaves,			Light Red Blood Red
Green Wood Sage Leaves,			F. Red Blood Red
Green Hemlock Leaves			D Brown D. Green
Green wild Crows ſoot,			Yellow,

Un

Un: Vitriol	R. *Vitreol*	*Shale*	Alum unburnt	Alum burnt
Greeniſh Jet Black	Black	Black		
Jet Black		Black		
Jet Black		Black	Opac	D. Green Green
All three Jet Black	Blackiſh	Green Blackiſh		
All three	Jet Black			D: op: Green
Dark	Blackiſh D. Opac	Brown Brown		D. Green Sedimt.
All three	Jet Black			
All	Jet Black			
All three	Jet Black			
All three	Blueiſh Black			Blackiſh Sedimt:
Black	D: Green Blackiſh			D: Green
D: Green Jet Black,	Green			
Black	Jet Black	Green Brown		
Green	then all three	Black		D: Green
Black		Gr. black		P: Green

Feb: 8 pt. 1ſt Salts	*Marine*	*Gemm*	*Borax*
Green wild ſcabious			P. Yellow
Green Ragg'd Robin,			D: Brown
Green Ladies Bed Straw			Yel. Br.
Green White Briony leaves			P: Yellow D: Green
Gr: Maed: ſweet Tops,			D: Brown
Green Toadflax leaves			
Green Cervicaria Leaves			D. Brown
Green Honey Suckles			D: Green
Gr: Tuſſilago Leaves	Green		
Gr. Wild Roſes and Stoles			
Gr. Wild Betony			Red
Green Wood Withy,			
Gr Elder leaves and Fl:			D. Green
Gr. Perſicaria			Reddiſh
Clownswort,	Green	Green	D: Green
			Black

Un. Vitriol	*R. Vitriol*	*Shale*	Alum unburnt.	Alum burnt.
Black		Gr. Black Black		*D*; Green
Opac Black		Gr: Black	Purple Pink	D. Purple D. Red
D: Greeniſh Gr: Black,		Bl. Gr, Br. Black		D. Br: Gr. Yell. Gr.
Darkiſh		o		
D. Blue: Bluiſh		R: Br: Br. Bl.		D. Green
Opac	Blackiſh Gr. Black	Brown		R. Brown
Darkiſh		o		
Reddiſh	Blackiſh Gr. black	Brown		D. Green
Opac Blue Blue		Gr. Black Gr. Blue		L. Green
All three Black Blue,		Black Purple		Size on blood
Deep,	Green	L: Green		P: Green
All 3 deep	Browniſh Greeniſh	Black Black		R. brown
Blue		Br. Black		D. Yell. br
Greeniſh	Black	D. Brown		
Blue		Op: gr.	Cl: Gr.	Curdl: gr.

Woodmercury			
Wild Angelica			D. Br.
Violet Leaves			R. Br.
Whin Buſh tops			
Nettles	Op. br:		Gr. br
Mapple Leaves,			D: Blue.
Broom tops			Op: gr.
Cowparſnip tops			D. br.
Jacob-ea			
Willow leaves			
Bramle Leaves;			D: Br:
Sow fennel			
Knot Graſs,			
Lark Spur,			F: Yell:
Aſh Leaves.			P. Red
Sheepherd's Purſe.			
Roſe Champion	P. gr:	P. gr.	Op. gr:
Purple Stock Gilly flower,	L. Purp.		P: L: blue
Dogtree Flowers,			
Burnet,			
Hyſſop Leaves			D. R. Br.
Valerian Leaves.			
			Black

All 3 a deep brown,				
Gr. black	Gr. black			
Black	Dark Brown			
All 3 tranſpar:	Blackiſh			
Black		Op. br.	Black	Op. br.
Theſe three Black,				Curdl. gr.
Blue all 3 Black,				
All three Black				Ol. Green.
All dirty Muddy				
D. Blue				
D. Blue	Coarſe Pur.			
Muddy				
All three black				
Foul Muddy,				
				Op. gr.
Deep Red			L. Purple.	
D. gr. Black,				
D Blue.				
Black				
Black	D. gr.			Op. Green.
				Pennyroyal

Penny royal			D: R br. Blood R.
Southern Wood			Gr. Br.
Ale coſt	D. gr. br.	P. gr.	D. gr. br. P: gr.
Red Carnations			
Burdock tops,			
Lavender tops		D. Red	Blood R.
Bugloſs tops		D: Red	Blood R.
Spotted Sage			Blood R.
Gr. Epithimum			
Harts tongue,			
Agrimony,			
Adianth. Nigr.			
Snake Root.			
Poly-pody Root,	br. r.		F. br. Red
Spignel Root			
Orvice Root			
Gujac			
			Black

Black	Bl: gr.		
Black	D. gr	Op. gr	
Bluiſh Black			
Black		Op. gr.	P. Green.
Bluiſh Black			
Black		Op: gr:	D: Purple faded,
Black Blue	D. gr:		L. gr.
Black	yn. bl. op, gr.	Op. br	L. Yellow
Black	Blue	Op. br. bl	bl. gr. d gr:
Black	Blue	Do	D: Green.
Black		Black	D. Green.
Blackiſh			
Black		Black	D: Green.
Black		bl: gr:	D. Green.
Blackiſh			
Blackiſh clear			
Pale pink	P: pink		

Tab.

Saſſafras

Balcauſtians

Camomile Fl.

Tab: 8 pt: 2	*Plain*	*Vitriol*	*Alum*
Fl: Harbells.	Lead	Black	F. Blue
Fl: Gentianella,	D. Green	Black	Pur. blue
Fl: Ragg'd Robin,	clear	bl: gr. bl bl: gr	Pink faded
Fl: Hawthorn	ſmall gr. Tea	bl: gr. Opac	br. Yell.
Fl: double peony	Pink	Purp: Curdl:	Cherry Curdl,
Fl: Foxglove	clear	gr. Black Op gr.	Yell gr:
Fl. of Sicklewort	clear	bl. gr. Black	L. Lead,
Fl, of Broom	clear	Black	Black Muddy gr.
Fl: Red Roſe champ,	clear	L. Purp: Black	Black,

Thus I have only given a ſmall ſpecimen of this Table; for the whole would run out to ſeveral Sheets of Paper, and be very dry and uſeleſs to moſt Readers. But I will venture to ſay that this Method of trying the Salts of Mineral Waters, is the moſt infallible and certain, of all others yet excogitated or practiſed; as it will ſoon diſcover theſe Differences among Salts not only of the ſame *Genus*, but ſeemingly ſpecies, which otherwiſe cannot be come at. *Ex. gr.* that the Salts of *Kinalton*, *Cliff* and *Wigglesworth*, which all contain Sal calcarium, a Tea of Dogtree Leaves ſhall turn the firſt Reddiſh brown; the ſecond Green, the third browniſh Red; and an Infuſion of black Poppy Flowers turns of a Copper colour with *Cliff* Salts & with *Wigglesworth* of a deep Purple That the Infuſion of Logwood turns of a claret Colour with *Cliff* Salts, and of a fine Peas bloom with *Wigglesworth.* That infuſion of Pearcock Apple tree flowers, with *Aſwarby* and *Stenfield* Salts is a fine Yellow but *Malton* of a blackiſh Green. Green fennel Leaves, their Infuſion with *Stenfield* Salt, was a Pink; with *Malton* Blood Red; with *Wigglesworth* an Opac Green. I could produce ſome ſcores of other differences among Salts reputed the ſame. Another Advantage of this Method is, that hereby rhe Characteriſtics of Salts would be greatly enlarged.

As to the neceſſary precautions for ſetting about this Work. 1 The Waters ſhould be tranſported in the very ſame, or near like Veſſels, that they communicate not foreign Taints or different Colours. 2 That they be taken up out of the Spring, and exhaled, at much the ſame, or ſhorteſt diſtance of time, before any of them have undergone inteſtine commotions, or fermentations, turning fetid or muddy then ſweet or clear, to the altering or changing their Principles. 3 All ſhould be evaporated in the ſame or like Veſſels, *viz* hard Earth, Glazed, Glaſs, or Porcelane, not ſome in Iron, others in Braſs, Earth Glaſs &c. That there be no ſuſpicion of the Metalls Communicating by the Action, Penetration, or Corroſion of the Salts on them; or cauſing different Tinctures, from the now ſeemingly different Salts, but originally the ſame. 4 That they be evaporated in the ſame Manner, not ſome in a ſand Heat, ſome in an Alembic, & others in an open Chimney, whereby may ariſe a ſuſpiſion of the Mixture of ſome Adventitious parts, with the fixt parts of the Water, of Soot, Duſt &c. And perhaps Wood Fire may have ſome different Effect from one of Coal, *&c.* 5 Equal quantities of Water ſhould be evaporated, in near the ſame given time leaſt ſome being evaporated ſlowly, others ſuddenly, a difference may ariſe not only in ne qualities, but Principle of the Waters, at firſt in all reſpects the ſame. 6 In ſeparating the remaining fixt Salt from the Earth of the Waters, the filtring Caps ſhould all be of the ſame Paper, leſt one being of thin Paper, and another of thick the firſt having very wide pores, may give way to ſome ſmall Earth to paſs with the diſſolved Salts, and ſo ſome ſolutions will be Muddier than others. 7 Either the whole Sediment, or fixt ſeparated Salts, ſhould be uſed before they are long expoſed to the Air, that they imbibe not ſome other Principles therefrom; or encreaſe or diminiſh ſome of thoſe they firſt had. 8 Solutions of all the Salts ſhould be made in the ſame kind of Water, Whether it be Spring, River, Pond, Rain or diſtill'd Water, tho' we only uſed the laſt; for different Waters may contain ſome different Salts, Earths, or Minerals, in their interſtices, and give different colours to the Infuſions, from what the Mineral Water Salts would do. 9 Equal quantities of different Mineral Salts ſhould be diſſolved in equal quantities of diſtill'd Water, as half a dram of Salt to four Ounces of Water. 10 When the Solutions are made they muſt be preſently uſed, that they get, loſe, or change not ſome of their parts in the open Air. 11 The ſundry Solutions being of equal Strength ſhould be put into different China Tea Cups in equal quantities, *viz* about a Tea ſpoon full into each Cup. 12 The Infuſions of Roots, Herbs, Flowers or Seeds, ſhould be near of equal Strength, fot ſome being weaker, and ſmaller than others, they may produce ſtronger or fainter Colours. 13 The China Cups uſed muſt be of the ſame ſort, Colour, Size and Matter, and ſet in the ſame light, that they alter not the Reflection of it's Rays, on the ſurface of the Mixtures. 14 The Phœnomona produced by the different Mixtures, muſt be taken at ſundry times, *viz* Inſtantly on mixing, a few Hours after, then after twenty four Hours, and laſtly after two or three days ſtanding, ſome of them chalenge the greateſt Attention, and ſtricteſt Obſervation, both of the Eye and Judgment, on mixing, they changing Shades and Colours as quickly as a flaſh of lightening, and the firſt ſudden glance being loſt is never to be recovered in that Mixture.

Now for the uſes that accrue from ſo much Labour and Exactneſs in ſeeking different Colorations from Solutions of diverſe Salts put to an Infuſion of the ſame vegetable, or Infuſions of ſundry plants poured on a Solution of the ſame Salt. 1 Hereby we are enabled with certainty to determine what are the fixt Saline principles, preſiding or exiſting in each Mineral Water; having firſt made the like Experiments on the four common natural Mineral Salts, *viz* Marine, Nitre, Alum and Vitriol. 2 Hereby we are convinced whether Salts generally hitherto reputed not only of the ſame Genus, but claſs, are in all reſpects really the ſame, or whether there are not manifeſt, but hitherto inadverted Differences, between them. 3 Whether the Phænomena ariſing from our Experiments on the Mineral Waters themſelves, at the Spring, are produced from the Salts Sulphurs or Earths ſeparately or Conjoynedly. 4 When we ſee the Phænomena ariſing from ſuch Mixtures of any particular Water, and know the veſtigable and ſeparable Principles of the ſame Water before, we are enabled, with greater Certainty, to trace out the true and exact proportions of thoſe ſundry principles in that Water, and immitate them. 5 Hereby we ſee and know whether there are any latent, and otherwiſe inviſible and untractable, unſuſpected Principles, adherent, intangled or lockt up in theſe fixt parts of a Mineral Water: 6 When by previous Experiments, I am come to the Knowledge, and convinced, of the principles exiſting in any Mineral Water, part whereof are fixt, and part volatile; If I can fix & precipitate the laſt in the Water, then evaporate the vehicle, pour diſtill'd warm Water on the dry Sediment, and with this Solution filtred, try whether I can by the ſame Means, Materials, and Mixtures produce the ſame Phœnomena again as at firſt, then I know certainly. 1 What are the parts loſt in any ſuch Water 2 How theſe ſame parts may be retained and preſerved. 3 And how the uſe of that Water in it's full extent may be preſerved. 4 Hereby vegetably become an infallible Teſt, to diſcover the moſt latent Principles in Mineral Waters, and again, by proper Methods & Managements, the Solutions of Mineral Water Salts ſhall be aſſiſtant to eſtabliſh the known, and diſcover the hitherto ſecret Virtues of vegetables: 8 Hereby is encreaſed the Number of certain Charactereſtics of each different Salt. 9 We find the never before diſcovered, differences of Salts, reputed all of the ſame Genus and Claſs, and ſo are directed to a proper Application of the ſame Waters. 10 Theſe Experiments, were it worth while, would lead on to the detecting of ſeveral pretended ſpecific Medicines, and Arcanums, prepared from vegetables; for hereby we have diſcovered ſome, and might have found out more, but knowing them leſſened our eſteem of them. 11 Hereby ſeveral frauds in pharmacy might be diſcovered, eſpecially in Salts; or the deceit of putting one Salt for another, eſpecially counterfeiting the natural Mineral Salts, as ſelling the bittern of Marine, or Rock ſalt, for Epſome Salt, or any other for Scarburgh; particular characteriſtics being found out for each Salt, Salprunella made with Alum inſtead of Nitre, Salt of Amber prepared from Soot inſtead of Amber *&c.* 12 This would prevent the Subſtituting, or aſſerting one Salt for another, as Natron for Hallonitrum, Alum for Vitriol, or maintaining common Natural Salts to be others *Sui Generis*, or of a particular kind. 13 This might alſo prevent the Frauds in ſelling one Water for another, factitious for genuine &c. Theſe are a gleaning of a very numerous ſcroll.

From theſe whole proceſſes it appears not only impracticable, but rediculous. 1 To attempt ſeparating and reuniting the total, intire, and only principles of thoſe Waters, as they were at firſt, when they riſe out of the Earth, for either the volatile principles are loſt, or preſerved; if loſt, we can neither recover them, nor imitate them in the Water without Addition, and if we add it's no longer the ſame Natural Water, if preſerved, they muſt be fix'd, and being once fix'd, we can no more render them volatile, without Addition, which changes the Water, nor can we reſtore that Mineral Elaſtic, compreſs'd Air, which they brought with them, and is ſo quickly altered, nor know we any more how to make the particles of Water lie ſo lightly upon one another, and have ſo large pores between it's parts, ſo as to give it it's firſt levity in weight, nor can we ever diſſolve the Earth, by Water. Fire or Acids to reſtore it's former fluidity, 2 Nor is it leſs idle to ſay, that we can never be either Morally or Abſolutely certain what the true principles of any Water were, except we can decompound and recompound them again, in the ſame manner they were at firſt, except the objectors can firſt ſhow us that they can from their Knife and Cynders recompound the Ironſtone from which it was taken, ſo as to be the ſame in all reſpects, and Accidents, as when firſt taken out of the Earth, or that I am uncertain, or will no not believe that the Table I write upon was ever a Tree, except it can be reſtored to it's former vegetating ſtate; or that tree was ever in ſeed or ſlip, except I ſee it turned into the ſame ſeed or ſlip again. 3 It's no leſs weak to talk of imitating the beſt genuine Mineral Waters, for who can give a Mineral Spirit, or diſſolve the Calcarious or Ochrous Earths in them, or mix and unite the Volatile Principles in them, ſo as to make all appear one homogene fine transparent, Spirituous Body as at firſt.

Table 9th *Some Experiments made with the Serum of a Young Perſon's Blood, of a healthy Conſiſtence and Mixture,* Col. 1 *The Mixture* 2 *The quantity loſt or evaporated in a gentle Heat, before it coagulated or hardned.* 3 *The Proportion that the part evaporated bare to the whole. All theſe Mixtures ſtood in an equal Heat the ſame time and carefully weighed both when put in and taken out.*

Serum Gr. 120	Gr. 22	2 11
Serum 120 com: Wa: 60	Gr. 34	3 16
Serum 120 Water 60 Precipitated Vitriol Gr. 3	0	0 loſt
Serum 120 Water 60 Emmet Salt Gr. 3	37	1 5th
Serum 120 Water 60 Loansburrow Salt Gr. 4	22	3 25
Serum 120 Water 60 Whaley Salt Gr. 2	88	1 2

The ſurface of theſe when cold was very beautifull, and ſhowed the different ſpaces taken up by a warm and a cold Air. Their Coagulums were all hollow in the middle, and high about the Glaſs ſides. But the 2nd when taken out of the Heat was looſe, and when cut through had much Water. The laſt was harder to coagulate than all the reſt, and ſtood three times longer in the Heat than the reſt;

Table 10*th Part* 2d.

	Grs:	Grs.
No. 1	125	80
2	160	27
3	180	20
4	122	60
5	57	40
6	153	53
8	210	60
9	145	99

Table 10th. *The Effects of Mineral Salts, on both Animal* Solids *and Fluids together The Beef here uſed was Fibrous, waſhod very White in Sundry Waters, cut lengthway, each piece* 5 *Inches long, the laſt* 8 *Days there was a hard Froſt every Night.*

Spaw Salts	*Serum.*	*Water.*	*Beeef.*	*Day ſtood.*	*Effects*
0	140	40	13	5	Stunk
Harrigate Sul- *phur Salt.* Grs: 6	160	60	17	6	Stunk
Crickle Salts 9.	140	80	19	9	Stunk
Matlock Salt 11.	120	60	22	17	Began fetid
Kinalton Salt 9	120	40 *h*	23	17	fetid
Braughton 9	120	60	23	16	
Cunleyhouſe 9	140	80	22	17	The 7 began to Stink
Hanbridge 9	126	60	18		
Wiglesworth 9	120	60	11		

There were three more Bottles with Serum and Beef mixt with diſtill'd Water from Harrigate Sulphur Well, which ſent ſuch a quantity of Sulphur over the Helm, as was both Suffocating and Incredible, which in Bottles well Cork'd and Sealed, was preſerved 10 Months but on opening the Bottle and Corking it up again, the Sulphur was loſt, and the Water became perfectly ſweet in four Months after, tho' a thick Brown Sediment laid at bottom. Beef and Serum put to ſome of the clear of this freſh'd Bottle, made No: 10. Other Beef and Serum put to the thick in the bottom of it, was No. 11. Beef alone put to the clear of it was No: 12. 10 11 Stunk abominably in 3 days and in 3 days more, all three were paſt enduring in the Houſe, tho' all the vials were open in a Cool Room in 17 Days the Beef in all three was not only intolerably fætid, but turn'd to a meer Slime or Gelly, as was alſo the Beef in No. 1. 2. 3. 5. The Beef in 6. 4. 8. 9. was ſtill ſweet and ſhortened 1 4th of an Inch. The Beef taken out of them all and the open Phials ſet before the Fire, which raiſed the Spirits in the Thermometer from 15 below temperate to 140 above it, yet this Heat diſpoſed them not to coagulate, tho they ſtood 3 Hours and half, but the Liquors pour'd out and ſet in ſmall Tea Cups before the Fire till they coagulated. No. 1 loſt moſt of it's Stink. 2 Thick White and Sweet. 3 Still fetid, quickly coagulated. 4 Brown and fetid ſtill. 5 A meer Red ſanies terribly fetid. 6 Sweet clear ſtiff Jelly, ſhined when cold. 9 Sweet thin and red.

Auguſt: 1734 *We got a Piece of the ſtrongeſt, thickeſt, ſtiffeſt Size of Pleuritic Blood, like Leather, took all the Red Specks from it, and waſhed it in Sundry Waters, cut it in equal ſquare pieces, each weighing 24 Grs. put them in ſundry Phial Glaſſes with 60 of diſtill'd Water a piece,* Col. 1 *The ingredient put in each Bottle.* 2 *It's Weight,* 3 *The No of Days they ſtood.* 4 *The Effects of their ſtanding.* *Table* 11th.

Spt. Nitrous D	30	200 days all freſh	
Ol. Tartar	30		
Spt C. C.	30		
Sal. Calcar:	10	10	Began to Stink
Nitrous Chalybeate Salts	10	10	Stunk abominably

Northampton Nitres	10	12	ſtunk leſs, reddiſh,
Cliff Salt	5	Vitriol 21	Reddiſh diſſolved a little and ſweet.
Maudſley Salt	10	27	Stunk intolerably,
Middlewick Salt	2	100 days all freſh	27 Softened and Diſſolved
Cartmall Salt	10		Little diſſolved Reddiſh

27 Days after mixing, the firſt were undiſſolved; only the ſecond was ſwell'd and ſoft, but in a 100 Days after, the ſize was diſſolved. The ſecond three and *Maudſley* on Octr. 15 became abominably fœtid; but had diſſolved their Size.

Inferences from Table 9th 10th 11th:

Firſt (from 9. 1) We ſee with how ſmall a Heat above the Natural, the Animal fluids coagulate. 2 With how little loſs they thicken, even with the Dimunition of 1-6th part. *Corrol:* 1 Hence ſee the Neceſſity of frequent freſh Supplies of drinkables to maintain the fluidity of the Blood, and prevent it's Coagulation, Stagnation, or unnatural Coheſions, both for preſerving Health, and keeping up a due Balance between the Solids and Fluids, ſeeing perſpiration, and the loſs of the more Watery parts thereby, is ſtill carrying on in ſome Meaſure. *Corrol* 2 See here in how ſmall particles the nutritive parts of the Body lie in the *Serum*, how near they lie to one another in the Blood, and how near the points of Attraction, that by ſhortening their Lines of Diſtance, only 1-6th part, they ſhall cohere, unite, and form one indurated Maſs, *Corrol* 3 Here we ſee the Neceſſity and Convenience, of theſe Nutritive particles, that they might more readily ſupply the worn off parts, be always near at Hand, and eaſily attached, and the containing Veſſels ſuſtain little loſs, by their continual wear. *Corrol* 4 Since the Earthy parts lie ſo near together, in Blood of a laudable healthy Aſpect and Mixture, then habitually pouring in Liquors of a tenacious viſcid Nature (whoſe ſimple Watery parts the Action of the Veſſels will ſoon filtre and ſtrain off from the groſſer) muſt certainly promote Coheſions in the Blood, and Obſtructions in the Veſſels; eſpecially when we conſider that the ſaline parts of any kind, are alſo very ſmall, and therefore will be moſtly ſtrained off, and carried out, with the thinner and more Watery parts; and ſo leave only the more Earthy, groſs or Viſcid behind *Corrol* 5 Since ſubſtracting ſo ſmall an aqueous part of the Blood, does render it Viſcid, especially when the Bodies heat is encreaſed conſiderably at the ſame time, this accounts for Peoples being ſuddenly ſeized, with intermittent, remittent, and inflammatory Diſeaſes upon exceſſive Heats; ſtrong, and long continued, brisk Motion, or Agitation of the Body accompanied with profuſe Sweats. *Corrol.* 6 Since the Earthy particles of the Blood, are ſo ſmall, lie ſo near one another in the *Serum*, and are of an Attractive Nature, and ſo diſpoſed to Coheſion, in a ſtate of Reſt and encreaſed Heat, then, this ſhews 1 The Neceſſity of Exerciſe, both for the more regular Nutrition of the Body, the firmer Attachment and Adherence of the Nutritive parts, the ſhaking of the Solids, the better Mixture of the Fluids, the preventing the groſſer parts reſting, and forming a Lentor near the internal Surfaces of the Veſſels, and thereby hindering partial or total ſtagnations, or coagulations, and ſo Occaſioning Obſtructions 2 As this ſhews the Neceſſity of Exerciſe, ſo it cautions us againſt the intenſneſs, ſeverity and Continuance of it, to the thurſting forward, and expelling the finer parts of the Blood, leſt it do that very Miſchief in a higher degree, and after another manner that the want of Exerciſe might produce, or the uſe of it was deſigned to prevent. *Corrol* 7 Since the Earthy particles of the Blood lie ſo near to one another, even in the Serum, and that the Blood, in Circulation, has ſtill it's finer parts ſtrained off by lateral Veſſels, and theſe again ſending off other Veſſels yet ſmaller from their ſides, then the parts, in the middle rate Veſſels, muſt be conſiderably thicker and ſtronger, and want ſome Dilution to carry it on, which is provided and poured in by the *Lymphaticks*. Hence appears the Neceſſity and Uſe of the *Lymphaticks*, and that they ſhould Exiſt every where over the whole Body, as far at leaſt, as the Diviſions, Subdiviſions *&c.* Of the Sanguiferous Veſſels reach.

2 (From 9: 2) We ſee that from the Addition of Water to the *Serum*, 1 It's coagulation was retarded, and above one half more waſte

was required to bring it even to a looſe coagulum. 2 That tho an unnatural Heat did force a coagulum, yet it was but a forced one, and the Mixture taken from the Fire, returned in a good Meaſure to it's former Fluidity. *Corrol.* If the *Serum* alone returned not to It's Liquid ſtate, upon Ceſſation of Heat. But It's Mixture with one third Water, made it become fluid again, on meerly taking away the Heat, then how much more fluid muſt it be where it has the Action of the Veſſels in a Circulating State. *Corrol* 2 This plainly ſhows that where there is a viſcidity in the Blood without any weakneſs, or diminiſhed Spring or Vigour in the Solids, that it's the Effect of meer Repletion, and is taken off by leſſening the quantity, and thining the remainder.

3 (From 9: 4:) We ſee of how great Service a little Salt in the Blood is, not only to ſtimulate the Solids, which might otherwiſe prove reſty but to attenuate the Fluids, and prevent their running into unhealthy Coheſions. The *Serum* alone coagulated with the loſs of a 6th part two parts *Serum* and a third Water, thickened with the loſs of a 5th part, but the Addition of a little Salt to the Mixture, makes the loſs ſtill greater. *Quere*, Is not this attenuating power of Salt, owing to it's vaſtly, diviſible Minute parts, mixing every where with the *Serum*, interpoſing it's particles between the earthy parts of the Blood, thereby leſſening their Attractive powers, whilſt it lies in the interſtices of the Water?

4 (Tab: 9. 6.) We ſee that ſome Salts even in a leſs quantity, act with a far greater, even double or trible, repulſive power or force than others, thus *Whaley Spaw* Salt prevents Coagulation, till half the Mixture is evaporated, whilſt *Emmet* Salt hinders it only to the loſs of a 5th part, and *Loansburrow* prevents it not at all.

5 (Tab. 10. 1.) See the Diſpoſition of both theſe Animal Subſtances, to run into putrefaction, which even a Mixture with Water cannot prevent, tho' in a cool Seaſon of the Year as Septr: and Octr: 2 That the leſs Mineral Salt there is in the Animal Fluids, the ſooner they go into putrefaction. 3 That of all the Mineral Salts, common Salts reſiſts the leaſt, or gives Way ſooneſt to putrefaction; for the Marine Salt from *Harrigate* Spaw, preſerved the *Serum* only

24 Hours longer, than the ſimple *Serum* without Salt. 4 A Mixture of Marine Salt and Nitre keeps the fluids longer freſh, than ſimple Sea Salt, thus *Crickle* Salt reſiſted putrefaction to the 9th Day: i. e 3 Days longer than Harrigate. 5 The larger quantity there is of Nitre, the longer it keeps freſh, therefore Matlock Salt preſerved the Fluids to the 19th day, and crickle only to the 9th, tho' the Nitre in both be *Sal Calcarium.* 6 Neither do all Nitres preſerve alike, for tho both *Kinalton* and *Cunleyhouſe* Spaw Salts are of the ſame ſpecies of Nitre, and Nitre only, yet they began to putrify the 37th Day, but *Hanbridge* and *Wigglesworth* Salts kept them perfectly freſh and ſweet While they ſtood by me, which was about 220 Days. 7 Some Salts recover the red colour of the *Serum*: ſome deeper, others lighter, for the *Serum* with *Hanbridge* & *Wigglesworth* were both of a deep Red, but the plain *Serum* and Marine Salts were all clear. 8 If *Serum* expoſed alone kept freſh but few days, that and the Beef put into the Diſtill'd Sulphur from *Harigate* Spaw freſh'd again, kept yet worſe, for that putrefied the third Day, and on the ſixth Day was ſo intolerably fetid, that it was paſt bearing in the Room, and the Beef was turned to a meer putrid Slime or Gelly. In the 17th Day the Beef in the Marine ſalt was in the ſame Condition 9 The Beef in *Hanbridge* and *Wigglesworth* Nitre, not only kept freſh, but were contracted, ſwelled in the middle, and ſhortened from 7-8ths to 1-4th of an Inch. 10 We ſee much Acrid Salts in the Blood, breaks it due Craſis and Rareſies it, for whereas a Two Drams of *Serum*, and One Dram of Water mixt freſh, loſt only 34 Grs. till the Mixture thicken'd by Heat, here when fully putrified. A Three Drams of them exhaled out of the open Bottle in the Air, Gr. 55; and ſet before the Fire till it thickend, it loſt 80 Grs: more, ſo there was left only 45 Grs. 11 Some Salts have a power of not only preſerving from Corruption, but of attenuating & thinning the Blood, thus the Mixture with *Wigglesworth* Salt, loſt 35 Grs. out of the Bottle, and alſo 90 Grs. more before the Fire, ſo there remain'd only 55 Grs. which yet turned neither very thick nor ſtiff. 12 Before theſe fetid and freſh Mixtures were pour'd out off the Bottles, and ſet before the Fire, they became thinner by the heat whilſt in the Bottles; hence we ſee a moderate Heat thinns the Blood; but after they were pour'd out they thicken'd. So that a great heat thickens the Blood and Serum. *Corrol.* This ſhws the practiſe of

Applying ſcalding hot Baths or Fomentations (except in Caſe of a Mortification) to be a very great Errour, for the general intent of theſe being to thin the humours in the ſmall Veſſels under the Skin, and give them Vent by Perſpiration, which we at the ſame time ſuppoſe to be relaxed. If we apply them too hot the Solids are ſhrivel'd up and contracted, and the fluid's in danger to be coagulated. But on the contrary if we mean to ſtimulate, and brace up the relax'd ſolids; it's not only neceſſary that ſuch Baths and Fomentations be Spirituous and penetrating, but alſo very hot: *Corrol*: 2 It's hence alſo plain that there is a very great difference of attenuating virtue in theſe Salts; for *Wigglesworth* is the moſt powerful thinner of the Blood, *Hanbridge* next, then *Braughton*, of theſe few Salts we tried, may we add as a third *Corrol*: That it ſeems not only neceſſary that we know the Impregnating principles of thoſe Waters, but alſo the ſundry ſpecies and proportions of thoſe ſame Principles that we may know which of them are the moſt proper and powerful, to ſend on our intended Errand.

Sixthly (Tab. 11:) We ſee 1 That as well the healthy, as morbid Animal Juyces, are lyable to putrefaction; the viſcid, as the acrid humours 2 Since neither *dulcified Spirit of Nitre*, nor *Spirit of Hartshorn*, were able in ſo many Months to diſſolve this thick ſtrong Size, then neither alcaline Animal Salts, nor acceſſent mineral Salts, ſeem to be the greateſt Attenuators of the Blood, in a viſcid unhealthy ſtate, by a primary, but a ſecondary Intention, *viz* as *Spirit of Hartshorn*, by the exceeding ſmallneſs of it's volatile parts, makes it's way into and mixes with all the parts of the Blood; interpoſes it's little Atoms between the Sanguinary Coheſions; and at the ſame time gives a brisk ſtimulus to the Veſſels, increaſes their vigour, and thereby accelerates the Motion of the Fluids, and the Action of the ſolids. The Salts reaching the Bodies ſurface, cleanſe and ſcoure the Glands of the Skin, and ſo encreaſe, and promote perſpiration, even beyond it's natural Bounds; and by too liberal an uſe of it, it may exhauſt the Watery part too much from the Blood, and the Veſſels upon the Irritation ceaſing, flagg and fall back. The Nitrous Spirit on the other Hand, cools, irritates and directs the Watery part to the Kidneys chiefly. 3 Tho' Marine Salts be powerful diſſolvers of Viſcid Blood and Serum, yet as they heat and dry the body too much, ſtimulate with too much heat, without bracing or ſtrengthening, and encreaſe the Acrimony, they are therefore improper, except in a too great Fullneſs of the Body with ſluggiſh Juyces, whereby the Veſſels are relaxed, their force weakened, and their Reſiſtence over the Fluids leſſened 4 Nitrous Salts diſſolving this Size, preſerving the Blood from putrefaction, and reſtoring a red Colour to this piece of white tough correaceous Size, ſhews us, that in inflammatory diſeaſes, where the Blood wants Attenuation and Cooling, theſe laſt Salts are of all others moſt proper, and Waters highly impregnated with (provided they are not too purgative) are the ſafeſt in hectical chronic Diſorders; with an unequal Mixture, Sizy or Grummous ſtate of the Blood. 5 The Size in *Oil of Tartar* ſoftening ſwelling and continuing like a thick Mucus. ſhows that nothing was wanting to a total Diſſolution, but the Action of the Veſſels, and Heat the Effect of Motion.

Table 12 Bull's Gall, and diſtill'd Water, *of each two ounces and a half mixt, and divided into* 29 *equal parts, in as many clean phial Glaſſes, with the following Salts or Sediments ſet by* Novr. 12, 1733. *In each Glaſs except the laſt was* Grs. 6: *Of Salt or Sediment*

	Days	were fetid and caſt out,
Walcote Sediment *Ansby* Sediment *Cawthorp* Sediment,	5. 9.	No. ſ. 1 3. 4. 8. 13. 15. 18. 18. 19.
Alum Cryſtals do without Alcali. *Bingham* Sediment		Vitriol, and Alum ſine Alcali, coagulated the Bile & turned not fetid.
Vitriol Cryſtals	14	No. ſ. 2. 9. 12 fetid
Dropping Well Sediment		
Tuewhet Sediment. *Burlington* Sediment *Crickle* Salt,	49	No. ſ. 5. 6. 7. 10 all ſweet and were ſo 200 days, that they were caſt out.

Scarburgh

Scarburgh Sediment	33	No. 11 began to be fetid
Filah Salt		
Harrigate Sulphur Salt,	9	No. 14 turned fetid.
Kinalton Sediment		
Stenfield Sediment.	17	No. 16 began to Stink.
Sea Salt		
O*rſton* Sediment		
Gall and Water only		

Hence obſerve 1 That here were no Salts ſeparated from their Earths, but *Sea Salt*, *Filah*, *Knaresburgh*, *Crickle*, *Alums* & *Vitriol* all the reſt were the complex fixt parts, Salts and Earth together, and yet either from Addition of the Earth; or the Nature of the Gall, they were longer in putrefying. That it was not from the greater cold of the Seaſon is plain. For in *Octr.* when the Serum was tried, it was moſtly froſt. That it was not from leſs alcaline acrid Salt in the Gall is evident, becauſe both Serum and Gall with Water became fetid the 5th Day.

2dly Gall being another Animal Juyce, is lyable to putrefaction as well as *Serum*, and that *Urine* alſo putrefies, daily Experience ſhows; and ſo does the globular or coagulating part of the Blood, but beyond all the reſt, the genital Liquor putrifies both ſooner and more highly therefore all the Animal Juyces when paſt their Digeſtions, are lyable to putrefrction. 3 As to the different times of putrefactions, the Animal Juyces in an extravaſlated ſtate alone, corrupt not much ſooner, than when they have a Mixture of Marine Salt, for No. 3. 13. 17 & 19 all became fetid the 5th day, and became ſo intolerable that they were forced to be thrown out the 9th. 4 Where there is a Mixture of *Marine Salt* and *Nitrum Calcarium*, the Juyces are preſerved from putrefaction, according to the larger or leſſer quantity of Nitre 5 ſuch Salts as have a coagulative power or property, preſerve the Juyces free from Corruption, as *Vitriol* both *ripe* and *unripe*, and *Alum* without the *Alcalies* of *Urine* and *Kelp.* Here we ſee a great Affinity between the laſt two Salts, for both coagulate the Animal Juyces, and both prevent their putrefaction.

We took 15 Grs. of *Hanbridge* pure Salt, 10 Grs of Salt of Tartar mixed and rub'd them in a warm Mortar, then poured them, on a red hot plate of Iron, over a ſlow Fire, they melted, boyled and flew a very little, like a Train of ſome Grs. of Gunpouder; then boyled away to a Jet black coal and dry, but fulminated not: The ſame we did with a like Quantities of *Wigglesworth* Salt, *Cunley houſe* Salt, and Salt of Tartar, all melted and burnt very bright with a purple coloured Flame, but made no more report than the firſt. No better ſucceſs had we with *Bournley*, *Moffat Well*, *Kinalton*, *Stenfield*, *Harrigate*, Salts, and Sea Salt with Salt of Tartar, but theſe with Marine Salt crackled a little, flew not but burnt and flamed much, when the Iron was hot, and mixture began to melt, (as they all did) the Nitrous Salt gave only a blue or purple Flame, either ſpread over the whole Iron, or creeping on the ſurface of the pouders. Hence we ſee that none of theſe Salts have this property of Salt petre; or of the Natron, as ſome will.

Being deſirous to know the different Temperatures of the Solutions of thoſe Salts, I put half a dram of Salts to two Ounces of common Water, in a long ſmall Glaſs, and putting the Thermometer into it, January. 30 1735: Being a hot Sunſhine day, Spirits in the Thermometer being two above the ſecond Inch, in the Air, and two and a half above it, when it had ſtood half an hour in common Water, for it ſtood half an Hour in each Solution, in a ſolution of *Aſwarby* Salt it was four above the ſecond Inch in a ſolution of *Alum* three above the ſecond Inch, in a Solution of *Sal Muriale* two and a half above it. In a ſolution of *Orſton* four above it, In a ſolution of Sea Salt five and a half above it. In a Solution of *Harrigate* Salt two and a half above it, in a ſolution of *Matlock* Salt two and a half above it ------- I made alſo ſome Tryals as to their Congelation, but the moſt exact was the following, common Water froze firſt, Solution of Alum four Minutes after, *Aſwarby* and *Orſton* Solution five Minutes after

Alum

Solution of Vitriol in eight Minutes after them, Solution of Harrigate Salts in half an Hour after Vitriol, Solution of Sea Salt not at all, and tho the Experiments were ſeveral times repeated, yet the laſt would never freeze, except it was left out all Night: So that of all the Natural Mineral Salts, Sea Salts is of the hotteſt temperature.

I ſhould have obſerved before, on the Experiments on the complex Sediment with *Gall* diluted, that we can neither ſuppoſe, nor allow the Earths in Mineral Waters to be an uſeleſs ingredient in the compoſition in all caſes, when we conſider the wiſdom and liberality of the great donor, the curiouſneſs of the compoſitions, and the variety of the intentions to which they are adapted, for had they been unſervicable, much more could they have been hurtfull, they might as eaſily have been ſent to us, through ſtiff ſtrong Clay, or ſtrained through the Chinks of ſolid Rocks, as we find ſeveral of them are; a Solution of Salts of Mineral Springs might equally anſwer the ſame deſign; but the Advantage of Teſtaceous Pouders, ſhows the uſe of Alcaline or Calcarious Earth, and the Saffrons, or Ruſt of Iron and Steel, the Benefit of Ochre, the uſefullneſs of Alum with Coral, the ſervice of Alum Glebe. And if we know not the uſes of the other Earths, it would be as great weakneſs raſhly to infer from thence, that they have none, as to ſay becauſe we know not the Vertues of many plants, therefore they have none.

That theſe Waters were not caſually impregnated, but with a deſign ſeems more than barely intimated to us, from this, that wherever abſorbing, or ſweetening only, is the ſole intent of the Water, there we have ſcarce any thing beſides Calcarious Earth; where purging and ſweetening, or correcting and diſcharging, of ſharp Salts is neceſſary, there Calcarious Earth and Salt, are found together; where ſtrengthening the Veſſels, or reſtoring a poor or decay'd ſtate of the Blood is wanting, there we have Iron Earth and Ochre in plenty; if bracing or ſtrengthening of thin weak worn, or broken Veſſels, is the intent we ſhall have an aluminous Glebe with Nitre; when only rouzing and heating ſluggiſh diſtended Veſſels, containing a cool watry flegmatic Fluid, is needful, there little or no Earth is required, but ſtore of Marine Salt ſhall be ſufficient: When purgation and correction of a ſizy Humour in the capillaries is indicated, a rich Nitrous Salt with very little Earth ſhall ſuffice; for the Nitre will lie in the Body till it is volatilized, and fitted for the ſmalleſt Veſſels, ſo as it can never be recollected from the alvine or urinary diſcharges. But Marine Salt being unchangable and heating, has a longer time and better opertunity, to heat, dry, ſtimulate, attenuate and quicken the Circulation, where the diſeaſe is an Atrophy, from too great a diſcharge by the Skin, we are provided with a double relief, one from an aluminous Glebe to brace the Skin, or to reſtringe, heal or thicken; the other is much Calcarious Earth to fill the dilated pores in Bathing.

Since there are ſuch real and veſtigable differences in theſe Waters. we cannot ſuppoſe that they may be uſed indifferently or promiſcuouſly, according to Mens Humours and Inclinations, without Judgment or Reaſon, therefore two things are requiſite to the Salutiferous and Beneficial uſe of them. 1 A tolerable Knowledge of their Conſtituent and component parts and contents; at leaſt as far as they are diſcoverable, as they come to us; we do not mean as to their Subterranean Generation, impregnation and preparation, for that is another work, hardly to be Effected without deſtroying the Springs themſelves. 2 A Knowledge of the diſeaſes and Conſtitutions of the patients to which they are recommended; for if one of thoſe Waters was an univerſal Medicine in chronic diſeaſes, there would be no Occaſion for ſo many, and if all would anſwer the ſame deſign, ſuch a diverſity would be needleſs. Hence ſuch as labour under a ſtiffneſs contraction, or indilatability, of ſome veſſels and ſolids, whereby the laſt proves an over match to the Reſiſtence of the Fluids, cannot reaſonably expect Relief from drinking the reſtringent corroborating claſs of Waters; nor can theſe groaning under a general Relaxation, on any juſt Ground hope for cure from Smooth ſoftening Relaxing Waters. Nor are diſeaſes, ariſing from ſtimulation, to be heal'd by Waters that encreaſe the Irritation, nor are theſe from too great diſcharges, to be relieved by ſuch Springs as encreaſe the out lets only. Nor theſe from habitual Coſtiveneſs to be carried off by Reſtringent Waters, nor theſe from obſtructions to be remedied by ſuch Waters as thicken the Blood, and make it more Earthy, nor is the cure of Hectics to be attempted by healing Waters &c.

Not only do Reaſon, and the Nature of the ſundry kinds of Waters prove this deduction, but their Effects from daily Obſervation & Experience. This ſhows not only the Advantage, but Neceſſity, of at leaſt a competent Knowledge of the Principles, Contents, and Nature of theſe Medicinal Springs, in ſuch as attend the Beds of the Sick, and would be juſt to himſelf and his patient, that he may know when & where to recommend the afflicted, with ſome probable benefit, when the uſe of Waters ſeem indicated and neceſſary; and this we muſt ſuppoſe him to know in the other parts of the Materia Medica, relating to acute Diſeaſes, for tho' the uſe of Mineral Waters is chiefly confined to chronics, yet theſe are the diſorders which render the Patients Life more miſerable and afflictive, and Mineral Waters, Judiciouſly, and ſeaſonably, preſcribed and uſed, have not only been inexpreſſibly more ſucceſsful than Medicines, but even more advantageous in Chronics than Medicines in general are often found in acutes. And I am ſure chronic Diſeaſes are not more profitable to Phyſicians, than proper Mineral Waters would be to the Patient. But let us ſuppoſe that Chronics are not attended with thoſe tedious afflictive Symptoms; yet as they kill ſuch a conſiderable part of Mankind, they chalenge the Study, Knowledge, and Care of Phyſicians. *& vice verſa.*

We ſee here a remarkable uniformity of Principles and Concurrence in them, to the ſame intention or deſign. Thus *Ex, gr.* where ſtimulation is indicated, there we have together with the Vehicle a Salt and Sulphur, ſo thin and fine, as both to lie inviſibly mixt in each drop of the Water, and ſo ſmall that they are not only capable of entering the ſmaleſt Veſſels, but even of penetrating the Interſtices and Fibres of the Conſtituting Membranes, fixing in them, exciting, and increaſing the motion of the Solids; which additional force communicated to the whole Nervous Syſtem, the Veſſels act with a greater force over their contained Fluids, when it's neceſſary to widen and extend the Veſſels to make them ſtill more flexible, the rigid and contracted more ſoft and enlarged, and ſo make way for a transflux of ſome pricking tearing fixt humour, as in Gout, Rheumatiſm, Sciatica &c. Then we are provided with, and muſt have recourſe to Waters, wherein is ſcarce any thing ſenſible, beſides a natural tepid, gentle, ſoftening warmth, which ſhall either promote the perſpiration of that irritating humour, by external uſe, or ſo dilate the Veſſels, and dilute the parts of the Blood, by drinking them, as to looſen that Humour, and throw it into the Circulating Maſs again, there to be Grund down and thrown out of the Body. When healing and drying are the things deſired; then a fine calcarious Earth, and impalpable Halitus, will make up the Compoſitum, or much Nitre mixt with an Alum Glebe. When opening of Obſtructions in the Body, is the deſign, then an incoercible, Chalybeate Mineral Spirit, with ſome volatile Iron and Vitriol in the common Vehicle, will ſerve the turns. When embracing & ſtrengthening the ſolids is indicated, then the laſt principles with a Mixture of Ochry or ferruginous Earth, will anſwer the purpoſe, when any of the natural outlets of the Body are morbidly encreaſed, then a fine impalpable mixture of Ochry and Calcarious Earths, and a ſcantling of Nitre, with the Water, will ſerve where a Nitro aluminous Spring is wanting. When Salts, whether acrid, or acid, are predominant in the Blood, and produce their miſchievous Effects either internally or externally, there a large portion of Alcaline Earth, with a little Salt, according to the nature of the Humour, but naturally and inimitably mixt with the Water, is the Remedy, when the Blood and Juyces are overheated and accelerated in their Motions, and unequally mixt, then a Water richly impregnated with Nitre, will cool the Body, diſſolve the unhealthy conſiſtences. Now we ſee. 1 That tho Mineral Waters anſwer ſo many different purpoſes, yet their compoſition is very ſimple and uniform, tho' inimitable, for we can no more impregnate them with that Mineral Spirit, then we can render their Earths ſo impalpable, and perpetually commiſcible with the inevaporated Water, even in a ſtate of Reſt, neither with, nor without Diſſolution. For by Diſſolution, tho' the parts be fine enough, yet by mixing with Water, the Menſtruum will be ſo weakened, that it will be incapable of ſupporting the Minerals, ſo they muſt fall to the bottom. But beſides, in fact we do not find that the Earths are capable of a total Diſſolution, and ſuppoſe they were, their nature would be changed into a compound *Ratio* of the diſſolved and diſſolvent; or into *a-tertium quid.* Without diſſolution, it could only be attempted by Levigation, and the fineſt porphiry and the greateſt Labour, can never reduce the Minerals into ſuch ſmall parts, as not only to mix with, but continue equally and inviſibly ſuſpended in the Water, even during a ſtate of long Reſt. Tho Mineral Waters, eſpecially of the Chalybeate Tribe, may ſeem to confute this Argument, by their precipitating ſomewhat to the bottom of the containing Veſſel, without the quantity of Water ſeeming to be diminiſh'd. This is only a quibble and no anſwer, for what they moſtly depoſite, is neither the calcarious nor Stoney part but only the groſſer part of the Volatile principle of Iron, which was too large for the pores of the Glaſs or Cork to tranſmit, and ſo the finer which ſuſpended, but eſpecially that called the Mineral Spirit being gone, it falls down in an Ochry ſubſtance; and what Earth does otherwiſe fall down, bears but a ſmall proportion to what moſtly remains. The Salts alſo it's imagined, (whether fixt or volatile) may be imitated; true it may ſo. But then 1 ſome of them are Volatile, incoercible, and therefore will not continue, but factitious Mineral Salts will continue therefore not ſo very Minute. 2 Theſe Salts which fly off, we are very often ſtrangers to their quantity & proportion and perhaps to the Genus or Species of ſome of them, and then how ſhall we imitate them. 3 There may be ſome Salts Volatile, which we imagine not ſo, which may not only fly off by Evaporating the Water, but even by keeping it in the cloſeſt Veſſels we have; but we have no ſuch factitious Salts, for even the fluid Salts, whether Vegetable or Animal, as Sal Volatile Oleoſum, Spirits of Hartshorn, and of Sal armoniac, are retainable in proper Veſſels. 4 Not only their Earths cannot be ſo exactly, minutely and imperceptibly mixt, nor their Salts preſerved and retained, but ſuppoſing they could, yet are they not capable of Entering. 1 The ſmalleſt Veſſels in Animal Bodies like the ſame principles in natural Mineral Waters, nor penetrating their firſt conſtituent Membraces and through the interſtices of the firſt forming Febres, like them. Nor 2 of making their way into the moſt fix'd, immoveable compacted Humours, whether grummous, Earthy, Viſcid or Tenacious, like the natural; and ſo interpoſing their ſmall Bodies between the contacts of the Coheſive humours, and thereby leſſening, or breaking their attractive powers; far leſs of repulſing them, nor of attenuating and diſſolving the tenacious parts of the Blood in the extream capillary Veſſels, ſo readily; for which Reaſons, factitious Mineral Waters never come up to the Efficacy of the natural, and this, Experience convinces us, is not only true in Theory but in fact, which makes us look on the deſign of examining Mineral Waters, in order to imitate them little leſs than rediculous, or deſiring an Art to defraud. We call Waters uniform, becauſe the principle of each conſpire, and concurr to the ſame deſign, we call them ſimple, becauſe the ingredients in the compoſition are not only few, but plain: They are Natural, in oppoſition to factitious.

But however uniform their Mixtures may be, yet view'd in another Light, their intentions are no leſs various. Thus a Stimulant Medicinal Spring, is of ſervice in all chronic Diſeaſes ariſing from a Relaxation, in activity and unwieldyneſs of the Solids, without a Fever, as Palſy, begun Dropſy, Leucophlegmatica, and a hundred other diſeaſes from the ſame ſource, only differing in form, part affected, and Symptoms. Calcarious Waters are beneficial in caſes proceeding from an acrid Saline humour in the Blood, fixing, pricking and tearing, the capillary Veſſels, ſanguine or Lymphatic, on either the inſide or outſide of the Body. Naturally warm relaxing Waters are as beneficial in fixt chronical, ſcorbutic, rheumatic, arthritic, ſpaſmodic, convulſive, nephritic, and many more pains with contraction. Chalybeate Waters are bracing, healing, ſtrengthening, cleanſing, vulnerary diſſolving, &c. As deobſtruent petrefying Waters are aſtringent healing, ſweetening &c. As well as abſorbent, Waters highly impregnated with Nitre and Calcarious Earth, are as eminent temperate Antiſcorbutics and Antihectics. Waters noted for cleanſing Kidneys, Ureters, and Bladder from Sludge, Sand and Gravel, are likewiſe uſefull for prevention and expulſion of the like unnatural Bodies out of the Liver, Gall Bladder, Lungs, and other Viſcera of the Breaſt and Belly. Nitro-aluminous Waters for cooling, drying, healing, ſtrengthening, binding, cleanſing, &c.

Thus from an Examination, Detection, and Reflection on the principles of theſe Waters; they ſeem naturally to divide themſelves into their ſundry proper claſſes. As 1 Relaxers, whereby the ſolids from rigid, ſtiff, painfully or uneaſily flexible, become wider, more entended, gliber, ſmoother & flexible, performing their Actions with greater Eaſe, Safety, Pleaſure, and for a longer time. 2 Stimulants, which inviſibly carry in them particles ſo exceeding fine, as not to enter the Veſſels only, but even their very Membranes, there, for a time, fixing irritating, enlivening and rouzing the dull in active Fibres, to a brisker, ſtronger, more continued and uniform Motion. 3 The ſame claſs are not only Stimulants to the ſolids, but cut & ſeparate the groſs coheſive fluids, parting Earthy or Sizy little Maſſeſs diſſolving the lentor on the inſides of the ſmall Veſſels, throwing it into the Circulating Maſs, there to be prepared and expell'd. 4 Diluters, which being mixt with the Blood, make it thinner, it's parts more ſeperable, leſs tenacious, and the whole driven on with leſs force, and more eaſe to the Veſſels, and yet the Fluids better fitted for Nutrition, Secretion and Evacuation, and all by the Interpoſition of the Waters fluid Body, thereby giving the parts of the Blood a greater Fluidity, with leſs Coheſion. 1 by dividing the parts unhealthly united, and 2 Expoſing them more immediately to the force and Action of the containing Veſſels, which ſtill grinds them more down, and equally mixes them with all the parts, till they are expelled inſenſibly. 5 Deobſtruents, or ſuch whoſe Buſineſs it is to open Obſtructions, as in a Cachexy Hyppo, Hyſterics, Obſtinate intermittents, Jand ce *&c.* 6 Abſorbents which ſheath up ſharp Salts in the Blood, beſide their Tearing Spicula, or little ſmall poignant points, in their Spongy *Bodies.* 7 Bracers or Strengtheners, which being a pretty large Claſs, is diviſible into ſeveral heads. 8 Evacuators. 9 Coolers. 10 Dryers, Binders & Healers *&c.*

We ſee from their Contents and Effects that they come to our hand ready and curiouſly prepared. Thus when opening of ſome Obſtructions in the viſcera chiefly, invigorating the Solids and accelerating the Fluids, is the deſign; then we find little beſides the common Vehicle impregnated by an intelligible and irretainable Air or Spirit, and a volatile Iron When they are intended for ſheathing of Acrid Salts, we find little in the Water beſides a large quantity of Alcaline Earth to ſweeten the Blood, and a ſcantling of Nitre to cool it, when ſtimulating and encreaſing the languid Motion of the ſluggiſh Solids, then fixt Salt, and a Mineral Spirit, are the predominant ingredients. When appeaſing any tedious Hurricane raiſed in the Animal æconomy by pain exciting Mixtures in the Blood, or fixt in the Veſſels on the Bodies ſurface or Extreams chiefly; then a Mineral Spirit, with a natural Warmth, in the common Vehicle, ſhall ſerve the purpoſe, the firſt to raiſe and cheer the Spirits, the other to ſoften, ſmooth and relax the Veſſels, whilſt the vehicle thins the Blood. When Evacuation is intended, the whole ſtreſs of that ſhall be laid upon the Salts, which ſtimulate the Bowels, whilſt a Mineral Spirit attends to ſtrengthen the Stomach, heat the Body and not only Support, but repair and enliven it, during the uſe of the Waters. ------ VVhen the Body is bloated up beyond it's Natural and healthy Bulk, by widened, in active Veſſels, and the Fluids become Sizy and VVatery thereby, here we are provided with VVaters containing a volatile, vitriolic Spirit, an Ochrous or Ferruginous Earth, with ſome Salt, or if theſe are too weak for the work, we have other ſtored with Marine Salt, and Sulphur, with ſome Mineral Spirit. When the Blood abounds either in quantity or Acrimony, & the containing Veſſel either too much dilated, extended, or worn, ſo as Hamorrhages in ſeveral parts of the Body in Sundry Subjects enſue, then have we Waters of an abſorbing gently laxative and cooling Nature, which both diminiſh the quantity, of Blood by Evacuation, ſweeten the reſt, ſtrengthen the Veſſels and reſtore the balance of the Solids and Fluids, and thereby prepare and direct all the Evacuations to their proper outlets. Or if theſe are too weak in frequent and great loſes of Blood, the Nitroaluminous Water comes in for the moſt ſervice. When cooling the Body and checking it's preternatural Heat (from the too quick Motion of the Blood and Actions of the Veſſels againſt it, and the Attrition of the Globules againſt one another) is indicated, then there are Waters abounding chiefly with Nitrous Salt to cool, and a little Alcaline Earth to ſweeten the Blood. Or to ſay all in few Words, when the Work is to be done by fixt parts chiefly; We have Waters provided with theſe According to the different intentions. But where the Buſſineſs muſt be done by volatile parts only, we have abundance and great Diverſity of ſuch Waters, which by Judicious advice may be recommended, but when a meer penetrating Mineral Steam is ſufficient, either for inward or outward uſe, theſe are ready, with ſcarce any other ſenſible or veſtigable Mixture, or parts in them. Schol. 1 From all this, we ſtill ſee more Neceſſity for an Acquaintance with the veſtigable principles of Mineral Waters, in order to their frequent anſwering any valuable purpoſes to the ſick, leſt being unſuitably choſen or adviſed, they may either clinch the diſeaſe inſtead of curing it, or prove fatal to the patient, and a ſcandal to the preſcriber. 2 It's plain from hence that it's as ſafe for an Ignorant Sick Ruſtic to go into an Apothecaries Shop, take and ſwallow the firſt drugg that offers it's ſelf; as for the Sick to preſume upon theſe Waters without the Advice of a Phyſician, who has ſtudied the Nature and difference of ſuch Waters. 3 That neither intereſt nor perſonal views, ſhould ſo far preponderate with a Gentleman

man as to make him adviſe a more ineffectual, or conſequentially a leſs ſafe Water, when he knows of a probably more ſafe and Effectual one.

Since the Effects of theſe Waters depend either on their volatile or fixt parts, or on both, then we ſhould ſtrive by all Methods, that Nature and Art dictate, to come at the Knowledge and Diſcovery of their impregnating Principles, as far as poſſible, and ſtill to look on Phyſick as lame, ſtanding on one Leg, till we be better acquainted with the Nature, Principles and Effects of that part of Medicine, which we find comes ready prepared to us, and only wants our advice, when where, and how it's to be uſed. For ſince their Effects depend upon their impregnating principles, and theſe are ſundry, according to their ſeveral intentions, and a Miſtake of this kind, either through the ignorance of the diſeaſe, or of the Water, may in the iſſue be of as bad conſequence to the patient, as cantharides given in a ſtrangury, Opium in a Lethargy, Colicinth or Aloes in a Dyſentry, *&c.* -------- Since ſeveral Waters anſwer their Deſign by their fixt parts chiefly, then ought we primarily to be ſatisfied what theſe fixt parts are, and leſs ſolicitous about their irretainable volatile Principles. And ſince the Effects of a far greater No. depend on their volatile parts alone, We need be leſs careful about their fixt. A Knowledge of both theſe parts may afford two uſeful hints in practice. 1 As to Medicines indicated, when ſuch Waters are neceſſary, but cannot be got. 2 As to the uniformity and ſimplicity of Medicines preſcribed.

Finis Partis Secundæ,

PART. III.

The Practical or Medicinal HISTORY *Of the Mineral* WATERS *of* &c.

AS it is the moſt eaſy, natural, and convincing Method, intreating of Diſeaſes, to begin with theſe on the *Surface of the Body* for being viſible, they are better underſtood in their Symptoms, Kinds, Cauſes and Effects, and therefore of great help to the Knowledge of others, which can only fall under our Judgment. For when we ſee the Effects of Mineral Waters on the firſt, we can tell with greater certainty where, and how they will be ſervicable in the laſt, or *inward diſeaſes*, from the ſame or like cauſes; and this is a 3d courſe to get acquainted with the virtues of Mineral Waters.

The outward Uſe or Application of theſe VVaters among us is either *General*, when the whole Body is immerſed in them, as in cold Bathing; or *Topical*, when they are deſigned only for one part of the Body by *Waſhing*, *Fomentation* or *Pumping*; and laſtly when the *Mudd*, *Clay*, *Earth*, or *Sludge* in the bottom of their *Receiver* or *Courſe*, is applyed to any one part.

As to *Waſhing*, ſome diſeaſes of the *Hair* may be remedied by it, as *falling* off, *ſhedding*, or *eating thereof by corroding Humours or Inſects*, either under or above the Cuticle, eating or gnawing It's roots here the uſe of ſtrong Sulphur VVaters has been of eminent ſervice, for theſe VVaters kill moſt kinds of inſects without the Body, and are incomparable deſtroyers of all ſorts of VVorms within the Body. Or if the *Hair* fall off from a Relaxation of the Membranes of the Skin, as is often the Caſe after Sickneſs, or in hot weather, frequent waſhing the Head in cold chalybeate Springs, will brace the Skin, and ſoon ſecure the Remainder of the *Hair*, or when the *Hair* is very brittle, breaks off, and from a parching hectical or ſcorbutic Heat of the Body, the inward and outward uſe of Nitrous VVater continued a few Months will remove both the Heat and this Effect, when a dayly Headach, or frequent cold catching in the head afflicts and imbitters the Life of any Perſon, we know of no ſurer and eaſier Method, than keeping the part ſhaven, and waſhing it every Morning in cold common or Mineral VVater.

In the *Morbus Pedicularis*, or *Louſineſs*, a Loathſome, yet real and grievous diſeaſe, here by keeping the Body clean and neat, feeding on wholeſome foods, and often drinking and waſhing in Sulphur VVaters, it may be readily and ſafely cured, by deſtroying the very *Neſts*, *Eggs*, and *Embrios* of that terrible Inſect and preventing it's further production. --------- *Scurffs*, *Scale*, *Dandriffs* or *Scald Heads* by waſhing ſeveral times a day, and drinking theſe VVaters, and gently uſing the Fleſh bruſh after, will cleanſe the Skin, and cure the diſeaſe, by ſweetening the Blood, opening the pores, and giving vent to the ſaline or viſcid adheſive Matter. If it's a *Moiſt ſcald Head*, from acrimonious humours, which if repell'd and thrown back into the Blood, by indiſcreetly healing up the Sores with ſulphurine or Mercurial Applications, they quickly irritate the Veſſels and Nerves produce Tremors, Convulſions and Death; however dayly waſhing and drinking ſtrong Sulphur Waters, and uſing at the ſame only a vegetable diet, will compleat the cure. But how Sulphureous Oyntments or Leniments ſhould be ſo dangerous, and yet waſhing with Sulphur Waters, ſhould not only be ſafe but beneficial; tho the Sulphur in both be the ſame, ſhall be explained elſewhere. To make theſe Lotions more effectual in a ſhorter time, they may be uſed warm, but the Sulphur being very volatile, and will rarely bear warming, let only a third part of the Water uſed be made hot, and poured into twice as much new taken up, and waſh the Moment they are mixed; and if inſtead of a Hand or Cloath, the Head be waſhed and rubbed with Herbs in the Water proper in that Diſtemper, as *Scabious*, *Elecampane*, *White Helebore*, Dock &c. It may promote the cure a little. --------- Theſe Waters are of no leſs Efficacy in other outward Diſorders, proceeding from a ſharp acrimonious Humour, Corroding the ſmall Capillary Veſſels of the Skin, as in *Pimples* or other Excreſcences on the Face, *Tettars*, or *ſmall creeping*

Erruption, with hard Edges. *Shingles*, a hot ſharp Humour breaking out on any part of the Skin, but chiefly about the waſte, in ſmall thickſett Erruptions often preceeded by Sickneſs, Faintneſs, Paleneſs, and yet the pulſe quick and high; the Middle of this Erruption heals firſt, whilſt it ſpreads at the Edges. There is another ſort of this called the *Herpes Miliaris*, breaking forth in ſmall ulcerous puſtles like Millet ſeed, and a third called the *eating Herpes* which excoriates and corrodes the Skin, and ſometimes the Fleſh. *Wild Fire*, is little Bliſters on the Lips, Cheecks, or Skin after Fevers, or catching cold. *Ringworms*, or dry rough, itching hard Red Puſtles on the Skin. The *Itch*, whether received by Infection or the Termination of a Fever, or of a cold. The *Scab* or *Scurvy*, the *Leproſy*, which is only the higheſt degree of a *Scurvy*, and is either hereditary, or comes from cold, hard drinking, unwholſome eating &c. Theſe all ariſing from ſharpneſs of the Blood, yield to waſhing and drinking of Sulphur Waters, only the laſt (of which afterwards) chalenges the uſe of the ſtrongeſt of this Claſs to be continued the whole Summer for ſeveral ſeaſons together, with a total abſtinence, all that while, from ſpirituous Liquors and Animal food. ----------- An *Inflammation* ariſes from a diminiſhed Motion or ſtagnation of the arterial Blood in the ſmall Veſſels behind It's Circulation, This may proceed either from too great a diviſion of the Globular parts of the Blood, or from a Fullneſs of the Veſſels, or a ſtoppage of ſome Evacuation, or from violent heat and ſudden cooling the Body &c. herein the diſeaſe is attended with Redneſs, Heat and Pulſation in the part, and if it tend to ſuppuration, there is a pricking, throbbing or ſhooting, if the Inflammation is large, a quick Pulſe, Thirſt and Fever attend it. In this caſe we rarely apply to Mineral Waters, tho even here they are far from being uſeleſs, for their Nitrous Salts, given as an alterative (not a purgative) are great Coolers, Diuretics and Diſſolvers of a tough ſizy Blood, the like is true of all *Liſters Sal Calcarium* when ſeparated from Marine Salt however in ſlight Inflammations with little ſwelling and no Fever, waſhing and bathing the part in warm, (not hot) Mineral Waters, may relax the Veſſels, whilſt the volatile principles and ſome of the Watery parts, penetrate the Skin and Veſſels, mix with and thin the obſtructing matter, help forward It's propulſion, or diſcharg by the Skin, wherby an end is put to the Fluxion of humours.

A *Contuſion or Bruiſe* cauſing a Stagnation, Coagulation or Extravaſation of Humours behind it, when it has laid the foundation of ſome chronic diſorders as a pain of the ſide, ſpitting of Blood, ſhortneſs of Breath, Bloody Stools, immoderate Menſes, *&c.* Here the laxative ſtrong Chalybeates take place; but eſpecially when they contain a large quantity of alcaline Earth, as *Malton*, *Thoroton*, *Orſton*, *Cliffe* *&c.* But *Holt* Water in *Lieceſterſhire* is incomparably beyond theſe and all others in this caſe. If the Effect of this Bruiſe ſhould be bloody urine, but all fall inconcievably ſhort of *Holt Lieceſterſhire*: But if the Bruiſe has left a pain or *Weakneſs of the Back*, *Thighs*, *Legs*, *Arms*, *or Shoulders.* Bathing ſhould be begun in *Buxton*, *Matlock*, or *Stonny Middleton*, then come to the uſe of the cold Bath, till pain ceaſes, and ſtrength be reſtored If the Bruiſe Leaves a continual dropping of Urine; If drinking *Holt* Water, and cold Bathing fail, . Waters will be of no Effect.

In *White Soft Swellings* of the natural Colour of the Skin, without Heat, pain or throbbing, ſaid to ariſe from phlegm, they readily yield to the preſſure of the Finger, and retain the impreſſion for ſome time; or where theſe ſwellings are windy Tumours, which yield to the preſſure of the Finger, but inſtantly recover their Fullneſs again they ſeem leſs heavy and uneaſy than the former; whither they proceed from weakneſs of the Joynts, Idleneſs, Intemperance, Diſtention of the Lymphatics, or a Bruiſe. Fall, or Blow, we adviſe waſhing & Fomenting in *Harrigate*, but chiefly in *Holt* Water with Riding a warming diet, moderate uſe of Red Wine, and the Fleſh bruſh, we ſhall treat of the King's Evil and Cancer afterwards, but if neither can become at, ſtrong Chalybeates may be uſed, tho of leſs Virtue, and will therefore take longer time.

Tho all *Ulcers* ariſing without any outward or viſible cauſe, are ſaid to proceed from a ſharpneſs of Humours of the Body, yet are they of ſundry Kinds and happen in various conſtitutions, ulcers are either *Simple or Compound*, the firſt has neither ſymptoms nor diſeaſe attending it beſides it's ſelf; the laſt may be accompanied with a *Rottenneſs of the Bone*, known from the difficulty and tedioufneſs of the cure, Stinking and Oilyneſs of the matter diſcharged, the blackneſs roughneſs and Spongyneſs of the Bone, which is covered with a white Viſcid humour. Or the ulcer may happen in a bad Conſtitution, as in a cachectic, ſcorbutic, ſcrophulous, hydropic *&c.* Or it may be attended with heat, pain convulſions, atrophy, too large a diſcharge of matter, Calloſity, Inflammation, or ſwelling *&c.* In a ſimple ulcer which reaches only Skin deep, accompanied with no bad Symptoms, any of the Limeſtone Mineral Waters may anſwer, as they are drying and healing; or the Sulphur Waters, as they cleanſe and reſiſt putrefaction, or the ſtrong Chalybeates as they brace dry and heal, but eſpecially *Holt Water*, as it's cooling, drying, reſtringent and healing. Ulcers with a Rottenneſs of the Bones, have been deemed iucurable by Waters, but the caſe of *Moſes Jinks* of *Coventry*, aged about Twenty two Years, whoſe Leg and Foot was ulcerated from the Knee to the Toe, full of Ulcers, which communicated all over the Leg and Foot with one another, ſo as any Liquor injected at one orifice, came out at a dozen more; if injected into one ſide of the Ancle, or foot, or Leg, it went quite through and came out at the Orifices on the oppoſite ſide: all the Bones of the Ancle, Heel and Foot were ſo rotten and ſwell'd, that many pieces crumbled off the matter diſcharged was intolerably thin, Oylie and Fetid, the Leg was pined to a meer Skin and great rotten Bones, a cough, Hectic and ſhortneſs of Breath attended; for three Years before he had gone through courſes of Phyſick enough, and of ſundry Kinds, according to his Circumſtances, the Leg was doomed to be cut off, when he applyed to me, I preſcribed him the inward and outward uſe of *Newnham Regis* Waters, which he drunk tepid, and with a Syringe injected it twice a day into his Leg, Waſhed and Bathed Foot and Leg in it as often, upon continuing this Courſe a Year together, he got perfectly recovered both in Leg and Conſtitution. From this inſtance we ſee the ſucceſs of Waters is not to be fairly determined by a ſhort tryal, hence Forreigners who have the patience to continue a courſe of thoſe Waters Yearly for four or five Months, ſeldom fail of cure, at three or four Years end, whilſt our impatience ſhort tryal and ſcanty uſe as rarely has the deſired Effect. If any from Ignorance or prejudice are diſpoſed to queſtion ſuch an extraordinary cure, let them attend *Ichley* Well near *Bradforth*, for two or three Seaſons, and they will ſee ſome dozens of them done there, ſuch as Medicine can make no juſt pretenſions to ------- Ulcers with a Hectic are beſt relieved by the inward and outward uſe of Matlock, but chiefly *Holt* Waters. Ulcers with a cachexy require drinking and waſhing in ſtrong Chalybeates as *Cliff*, *Aſtrope*, *Stocbond Brockhole*, *Orſton*, *Tuewhet* Spaw &c. With dayly brisk riding. Ulcers, in ſcorbutic and dropſical Habits, indicate the outward and inward uſe of Strong Sulphur or Chalybeate Waters, ſated with Marine Salt, as *Harrigate*, *Weatherſlac*, *Maudſley*. Or if it be a hot Scurvy. *Cheltenham*, *Arle*, &c. When a ſmall ſimple ulcer proves of long ſtanding in a brawny part of the Body, not near any joynt Membrane or Tendon, has little or no pain, makes only a moderate diſcharge of good Matter, ſuch a one about the Meridian or decline of Life, ſhould often be let alone or meddled with very cautiouſly, Since it's become a natural drain or iſſue, and perhaps (which ſhould be narrowly enquired into) has relieved the Body from ſome bad Sympton. -------- If an Ulcer is covered, but eſpecially has it's Edges lined with a tough gluey matter, is hot painfull and inflammed, with a large Flux of Humours to the part, it's called putrid, and requires the inward and outward Uſe of ſtrong Limeſtone or Sulphur Waters, or ſuch as are ſenſibly impregnated with both Sulphur and Steel, ſuch as *Keddleſton*, *Wirksworth*, or the ſtrong Chalybeate Waters abounding with alcaline Earth. -------- When an ulcer is of a very eating nature, and conſumes the parts about it with ſwell'd angry Lips; it's termed Phagedenic; drinking dayly and waſhing the ſore twice or thrice a day with ſtrong Sulphur Water is good, or waſhing them with ſtrong Chalybeate Waters, but chiefly *Holt* is excellent. ------- Such ulcers as run Sideways, or have ſeveral hollow paſſages under the Skin, or in the Fleſh, are termed *Sinuous*, ſuch muſt not only be waſhed with theſe Waters, but have them injected warm with a Syringe. The way to warm them with leaſt loſs of their Volatile parts and virtue, is to fill a phial Glaſs half full, cork it well, tye a Bladder over it, and ſet it in a Pan of cold Water; put both on the Fire till they are tepid, and the inſtant the Cork is taken out, let the Water be drawn up in the Syringe, and thrown into the Ulcers. Sulphur Water from Limeſtone, or ſtrong Chalybeats with much Ochre but eſpecially *Holt* Water. But if the Turnings and Windings of the Ulcer be turned callous, little is to be expected from Waters, till the calloſity is conſumed; when the Hardneſs is only beginning, the Matter diſcharg'd of a good Kind and Conſiſtence, not fetid, thin nor Serous, we hope that the Ulcer is only Sinous not callous yet, and the laſt mentioned Waters may be of uſe to them. -------- ſuch Ulcers as are inflammed, whereby the greater flux of Humours is invited to the place, by the irritating Matter; tho' Waters are rarely uſed in this caſe, yet when their Aſſiſtence is called in; the warm Limeſtone Waters challenge the preferrence, both to abate the Inflammation, eaſe the pain, and give a free diſcharge through the Skin, to the Sharp pricking matter, and for cleanſing the Ulcer, which can neither bear digeſtion, nor detergent Medicines, then chalybeats or *Holt* may compleat the cure, by drying and healing up the parts. -------- waſhing in Sulphur Waters warm'd is of good ſervice in windy or *Dropſical Swellings* (provided they are not ſhut up in a Bag) on the Feet, Legs, Thighs, Arms, or Trunk of the Body. ------- A *wound* is defined to be a Solution of continuity, or a ſeparation of the fleſhy parts by ſome outward Inſtruments, or Accident, and ſometimes from inward cauſes, as a weakneſs or fullneſs of the Veſſels, the ſharpneſs of the Blood &c. A wound from a puncture, Bruiſes, fall or blow, are often attended with a Blueneſs or Blackneſs, called *Echymoſis*, from the ſeparation of ſome ſmall Blood Veſſels under the Skin, which pouring out their Blood, it coagulates, turns black and diſcolours the Skin, we pretend not to recommend the uſe of Mineral Waters in compound Wounds, nor in ſimple ones attended with dangerous Symptoms, as a great loſs of Blood, Convulſions, Dilirium, Vomitings, Syncope, Fever, Gangrene, Mortification, Horror, Rigor, Hiccup, Stupor, Palſy, loſs of Speech, &c. Or where a Tendon is cut and ſeparated, or a Bone broken, ſhattered or ſplintered, or where the wound pierces into any one or more of the Cavities, or where any of the nobler Bowels are hurt, as Brain, Lungs, Liver, Spleen, Kidneys, Bladder, Gutts &c. But theſe wounds in which Mineral Waters are of ſervice, are 1 Contuſions, with ſmall or no wound of the Skin, but a ſeparation of ſome of the ſmall Blood Veſſels under it, which have thrown out their contained Blood, and it being coagulated appears of a Black or Blue colour, here often waſhing or bathing the parts either in the naturally warm Waters, or in Limeſtone or Chalybeate Mineral Waters made tepid, are found to relax the Skin, dilate the pores, thin the congealed Blood and make way for it's diſcharge through the Skin. 2 Simple wounds of the extream parts or ſurface of the Body, here only waſhing the part in cold chalybeate, or Limeſtone Mineral Waters, makes a quick and eaſy cure in healthy conſtitutions, and for this purpoſe Newnham Regis Waters have been of great Note. 3 Wounds that through Neglect; or ill treatment, turn to Ulcers, here we often find very ſurprizing good Effects of Mineral VVaters, but the ſame ſort, and after the ſame manner, as we adviſed in the like ſort of Ulcers. 4 Wounds attended with Convulſions Rigor, Horror, when the danger of a freſh Hemorrhage is over, would be mightily relieved from thoſe Symptoms, by often immerſing and waſhing in the tepid Waters or Limeſtone Mineral Waters warmed, for they looſen and widen the Solids and Veſſels, afford ſome Water through the Skin, and correct the ſtimulation. To recount the good Effects of all Chalybeates & Limeſtone Waters only by waſhing weak, Watery, pained Eyes, &c. Would prolong this part needleſs and lead me too far out off my Road, eſpecially ſince thouſands practiſe, and get cured by it Yearly.

Of Mineral WATERS *in inward Diſeaſes.*

I ſhall not repeat what is ſaid on the Waters in the Firſt Volume.

FIrſt the *Headach*, riſes from ſundry Cauſes, and is accompanied with various Symptoms, indicating different Methods of Cure. But I do not here treat of ſuch as attend *Fevers*, *Inflamations* of the Brain, or other acute Diſtempers; or outward Accidents, as *Falls Blows* &c. But of that which is *obſtinate*, *habitual*, and therefore *Chronic*. Whither it be occaſioned (1) from too great a fullneſs of the Blood Veſſels. or (2) From a ſtoppage or leſſening, of ſome natural or neceſſary Diſcharges, as *Menſes*, *Piles* &c. Or (3) from ſome diſorder of the Stomach as *Indigeſtion*, *Flatulency*, *Acrimony* &c. Or (4) from too great a ſtiffneſs and dryneſs of the Fibres. Or (5) from too great *Sharpneſs* or *Sizyneſs* of the Blood. Or (6) From too *Cold* and *Viſcid foods* eaten, as *Melons*, *Muſhroms* &c. In the firſt caſe, Bleeding, and a laxative, ſhould preceed the uſe of the Nitrous Purging Waters, as *Cheltenham*, *Comner*, *Moretonſee* Pump, *Kinalton* &c.

for theſe leſſen the quantity, and cool the Blood. In the ſecond, laxative Chalybeates come in play, as *Cliff*, *Thoroton*, *Orſton*, *Bingley* &c But theſe laſt, we ſhall meet with afterward. When the Diſeaſe is the Effect of a weakneſs of the Veſſels of the Brain, let them be ſtrengthened with the laſt Waters or *Holt*. If from (3) That muſt be corrected, as we ſhall ſee afterward. In the 4th Caſe, We can recommend nothing equal to the inward & outward uſe of the naturally tepid Waters, with a ſoftening ſmooth Diet, gentle Anodynes, and much Reſt. If from too great a viſſidity of the Blood, known from a pale Countenance, dull heavy Pain, ſlow Circulation, and a ſluggiſhneſs of both Body and Mind. The Steel or Sulphur Purging Waters impregnated with Marine Salt; or that and Sulphur, are preferrable; as *Weatherſlack*, *Stanger*, *Cartmal*, or *Cheltenham*. If from too great a ſharpneſs, or Biliouſneſs of the Blood, diſcoverable from the *Acuteneſs* of the pain, intenſeneſs of the *Heat* and *Flammyneſs* of the Eyes, either the lighteſt chalybeates, as *Aſtrope*, *Stockbond*, *Brockhole* *Wellingburrow*, *Congleton*, &c. Are good, or Waters with Nitre & a little Calcarious Earth, as *Cornwell*, *Kirbythewer* &c. Are proper -------- All pains of the Head are ſaid to be either *Eſſential*, or by *Conſent* from other parts. The firſt is continual, without any ſenſible or viſible Diſorder of the other parts of the Body, and is either *Pricking*, *Throbbing*, *Stretching*, or *Dull* and *Heavy*, the firſt and ſecond are from too great a fullneſs of the Blood Veſſels, or ſharpneſs of that Fluid, the laſt from a diſtention of the Lymphatics; ſo that both come from either a fullneſs of the Veſſels, or ſharpneſs of the Humours of the Head. The firſt the Ancients called a hot, and the laſt a cold *Temperies* of the Brain. The *Headach*, or *Hemicranium* by conſent, has not only it's Remiſſions and Exacerbations, but often goes off intirely, and the Perſon is well, it ariſes from ſome of the parts below the Head; the drying up of annual Ulcers, or ſtopping of Hemorrhages. A *Raptus* of the Blood to the Head ſhould be abated by ſoftening and relaxing the lower Extreams by bathing the Feet and Legs every Night in *Warm Water*, and waſhing the Head every morning in *Cold Water*, or pouring it upon the Head, lying in Bed with the Head raiſed, and Trunk and Extreams declining gradually to the Bed's Foot, when the *Headach* is from venereal *Scorbutic* *Gouty*, or *Rheumatic* Taint, Water proper in theſe Caſes muſt be applied to.

Second. A Chronic *Vertigo* or obſtinate *Swiming of the Head*, wherein all viſible Objects ſeem to turn round, from an irregular influx, and motion of the *Animal Spirits* into the *Optic Nerves*, and ſent to the *Retina*. This may ariſe from a Stimulating humour in the Stomach, twitching it's Coats, and by it's Nerves communicated to the Brain; or from intemperance, Hyppo and Hyſterics. In the laſt two caſes, Chalybeate Waters and Exerciſe, are of ſpecial Service, in the firſt caſe, Temperance, and natural reſt are indicated, but if the Blood Veſſels are too full, Bleeding will be uſefull to prevent a Breach. in caſe of Acrimony, the firſt paſſages being cleanſed upward & downward, the uſe of Mineral Waters is required to carry off, and correct the remaining Acrimony, to ſweeten the juyces of the Stomach, and waſh off the twitching ſaline Humours, relax the Nerves, and reſtore due and regular Secretion, Diſtribution, and Motion of the nervous juyces; for this intent, moſt of theſe ſweet Waters, impregnated with a volatile Spirit, will be of ſervice, but chiefly the tepid tribe. But this Diſtemper being often a Forerunner of, and Ends in an.

Third. *Epilepſy* or *Falling Sickneſs*, than which Diſeaſes there is ſcarce any that has ſo many ſurprizingly different Aſpects, or is either more violent or chronic, every fit the Body undergoes, deſerves to be deemed a kind of Death. The Toothach, Gout, and Gravel, have been eſteemed the Reproach of Phyſick, tho' this claims that Epithet with more juſtice, ſince pulling out the Tooth gives Relief in the firſt; Temperance, moderate Exerciſe, and a Milk Diet have often cured, or alleviated the ſecond; ſoft ſmooth, relaxing Medicines, or finally Lithotomy, eaſed the Gravel and Stone, but in the preſent Caſe, tho ſtrict Morality and Temperance, may ſo far render Life comfortable, as to keep under the Diſtemper, prevent it's encreaſe, and lengthen out time with the uſe of Reaſon, yet it goes but a little way towards a Cure. But if Sobriety and Moderation be neglected, a Cure is rarely to be expected. As this Diſeaſe is both ſevere and obſtinate, we ſhall treat of it at greater length, and with a cloſer Attention ---------- It has been attributed to the *Stars*, to the *wrath of the Gods*, to *Devils*, to *Witchcraft*, to the *Mothers Blood*, with many other things above, and beſides, Nature. We ſhall paſs the many Names given it, in ſundry Ages. *Apulcius* tells us, that ſuch as were ſubject to it were expelled the Family, leaſt they ſhould infect the Reſt; for the Ancients believe believed it ſo contagious, that if the Diſeaſed did but ſpit upon a ſound Perſon, he would certainly catch it, as appears from *Plautus* and *Pliny*. Authors have divided it into ſeveral different Kinds. As (1) *Idiopathic* when ſeated origionally in the Brain it ſelf; *Sympathic*, when derived to the Brain by conſent of parts, whether external or internal. (2) *Recent* or *Chronic* of late ſtanding, or long continuance, born with the Patient, or hereditary from his Anceſtors. (3) It differs in it's degrees of Violence; ſometimes the Sick is only ſiezed with Dimneſs of Sight, and falſe Repreſentatious of Colours; others are wholly blind for a Time, and fall down ſpeechleſs, with a ſound and tingling in their Ears; ſome have their Bodies toſſed with ſtrange and antic *Spaſmodic* Motions, whilſt both internal and external ſenſes continue as before, others are taken with laughter, crying, ſcreeching & ſinging, beat their Head and Breaſt, talk ridiculouſly, Skip up and down the Room, and uſe many ridiculous Actions, which excite Mirth in Byſtanders, but when the Patient is come out of the Fit, he is ignorant of all that paſſed, tho *Proteus* like he has appeared in a thouſand ſtrange poſtures, this is called St. *Viltus's Dance*, ſome have their Bodies ſuddenly thrown down on the Ground, deprived of Sence; ſuffer many Violent Concuſſions, and many ſtrong, reciprocal, involuntary Motions; ſometimes they froth at the Mouth, and diſcharge *Sordes*, *Urine*, and *Semen*, in the Fit. (4) It differs as to the Invaſion of the Fits: Some have them return dayly, weekly, monthly or yearly, others only at change, full, encreaſe, or decreaſe of the Moon, ſome have them at no known or certain period, but are wholly erratic, ſometimes it ſiezes oftener, other times after greater intervalls. (5) It differs in the length of the paroxyſms, ſome it holds ſeveral Hours, others as few Minutes. (6) It's alſo divided into ſeveral Kinds of Convulſions, as *Emproſthotonos* when the Convulſed parts are bended forwards. (2) *Opiſthotonos* which contracts or pulls the Body backward. (3) *Titanos* which ſuddenly Convulſes the whole Muſcles of the Body, the Perſon remaining in the ſame poſture in which he was ſiezed. (4) *Spaſmus, Cinicus*, Wherein the *Muſculus latus* is contracted on one ſide, and the Noſtrils are drawn like a Dogs when he Snarles. (5) *Riſus Sardonicus*, When the Muſcles on both ſides of the Mouth are contracted and the Perſon appears laughing. (6) *Triſmos*, which is a contraction of the temporal Muſcles, cauſing a gnaſhing of the Teeth. (7)

Phuſodes, or a cramp of Fingers, Toes, Legs, Arms, &c. There are many other Names of Convulſions, from the different parts affected, but all from the ſame immediate cauſe, which are either.

Nearer or more remote. the firſt can only be the various Expreſſions of the nervous juyces ſent from the common ſenſory of the Brain, by the Nerves into the Muſcles, whereby alternate Motions are performed. For when a large quantity of nervous juyces is impetuouſly forced into the Nerves, which ſerve for the Motion of a particular part, the Fibres of it's Muſcles muſt be greatly contracted; but the influx of the Animal Spirits into the other Muſcles of the Body, being in the mean time proportionably deminiſhed (whilſt the convulſed Muſcles are filling) they muſt flagg, till their turn come to receive the like influx, and the other ceaſe their contraction for a time. -------- The more remote or mediate cauſes are many, as when it's hereditary, or connatural to the child, being communicated to it in the womb, from a ſudden and ſtrong impreſſion received by the Mother, either too intenſely thinking upon, or ſtedfaſtly looking on epilepticks in their ſtruggles: or by ſome other ſudden and violent commotion of the Mothers paſſions, whilſt ſhe is with Child The diſeaſe may alſo ariſe from wounds, ſwellings, contuſions, or impoſtumation of the Brain, or it's Membranes, or from ulcerous diſcharges of Purpulent Matter, *Sanies*, *Ichor* or Blood, received and retained in thoſe parts, or from Excreſcencies of Bones, or carthilages on the inſide of the Scul, depreſſing the Meninges or Brain or from the venous Sinus's becoming Carthilaginous; or from ſome extraneous matters driven into & Sticking in the Brain, or it's Membranes, as Fragments or Splinters of Bones, ſhot, cloath, Hat, Paper or Tow, all which we have ſeen taken out of the Brain together with a part of it's Subſtance, and yet the patient recover; or from Calloſities on the inſide of the Scul, or from Inflammation, corruption, corroſion; or venereal Ulcers on the Meninges or Brain; or from purulent, or ſanious matter, pent up in any part of the Body, not to become at, where the corruption corrodes the ſpriggs of the Nerves, and communicates a painfull ſenſation to the Brain. Corroſive ſubſtances ſwallowed and retained, as *Sublimate*, *Arſenic* &c. The diſeaſe produced from any one of theſe cauſes we judge rarely curable by Waters. We ſhall therefore proceed to theſe for which we may reaſonably expect Help from Mineral VVaters. As (1) In Convulſions ariſing from whatever ſtrongly affects the Nerves, as the Acrimony of the Smallpox and Meaſles, retained in the Blood, either from an Imperfect erruption, or upon the retroceſſion of the Purulent matter into the Blood Veſſels, and thence to the Brain and Nerves; or from the not riſing of the Puſtles from want of Serum in the Blood to fill them, or from a Retention of ſome of that ſharpneſs, which might taint the Blood afterwards; in which laſt caſe Mineral Waters are chiefly uſeful, and theſe either of the Calcarious, Chalybeate, or Sulphur tribe. -------- Convulſions may alſo be occaſioned from Violent periodic pains, or ſtrong hyſteric paſſions, in the firſt, bathing in the naturally tepid Waters is beſt; in the laſt caſe, Chalybeats are preferable. Sometimes the Diſeaſe is from Worms irritating or corroding the coats of the inteſtines or from ſome very ſharp Humour in the Bowels twitching them. In both theſe the uſe of ſtrong Sulphur Waters, in which is much Marine Salt, has done wonders. *Stale*, *Sour*, or *Prick'd*, fermented Liquors have given ſome Perſons Fits, and encreaſed them in others, here *Buxton*, *Matloc*, *and Stonny Middleton*, are adviſable; or laxative Limeſtone Waters as *Comner*, *Kirbythewer*, *Tarleton*, *Newnham Regis* &c. -------- Cramming down food, either too much or too often, eſpecially if It's of hard digeſtion, may juſtly paſs for a cauſe; for hereby crude, ropy and unprepared chyle is poured into the Blood, here Chalybeate, or ſaline Sulphur Waters are adviſable, together with Temperance. Feeding too freely on glutinous, and leguminous Foods have been found hurtful to many, as *Peas*, and *Beans*, eſpecially if cold withal, as *Cucumbers*, *Melons*, *Muſhroms*, but here the thinning, attenuating, and leſſening the Fluids, by proper Diſcharges muſt be principally purſu'd which may be done by Saline, Chalybeate Waters as *Cliff*, or Sulphur Springs drunk a due time. An *Epilepſy Often* ariſes from a leſſening or ſtoppage of the natural or habitual Evacuations, whereby the Veſſels have a plethora laid upon them, and being diſtended, their force is leſſened and weakened, whereby the different parts of the Blood have an Oppertunity to form coheſions; but after diminiſhing the Quantity of Blood, Chalybeats will be of Notable ſervice both to diſſolve, and ſeparate theſe little unhealthy Maſſes, and drive forward the Blood with greater force to it's ordinary outletts, and to reſtore the Tone of the diſcended Veſſels. -------- Convulſions from drying up of old annual Ulcers, Scald, or Scab'd

Head, Leproſy, cuticular Erruptions unſeaſonably heal'd up, by Mercurial or Sulphurine Oyntments, Liniments, Lotions, Baths, *&c.* Theſe owe not ſo much their Origine to a Plethora, as to an Acrimony retain'd in the Blood. Here drinking and Bathing in the warm Waters, or the inward uſe of Light, but chiefly laxative, Chalybeates is uſefull. The diſeaſe produced by an indiſcreet uſe of rough reſtringent things, as *Alum*, *Colcothor* &c, require a ſpeedy, and long uſe of the naturally warm Waters. -------- But theſe convulſions which ariſe from the profuſe and unſeaſonable uſe of *Bliſters*, *Theriacs*, *hot Cordials*, or in ſeveral *Fevers*, *Abſtinence*, *Emptyneſs* of the Body, after long and Severe Sickneſs, *Poyſons* &c. Having no Relation to the Buſſineſs of Waters we paſs them over. If they come from ſtrong Imagination, great and ſudden Frights, or violent paſſions, tepid bathing is of great uſe, with drinking ſuch Waters plentifully if from long grief, ſtrong Chalybeates, and riding much. If from Superpurgation the ſtrongeſt reſtringent Chalybeate Calcarious Waters are beſt.

Fourth A *Palſy* acknowledges for it's immediate cauſe, whatever may hinder, or leſſen the free influx, or Motion and Circulation of the nervous juyce, or arterial Blood, into the Muſcles, whether it be from a ſuppreſſion of any uſual Evacuation. (2) Or from cold or a moiſt Air. (3) A Viſcidity and Groſsneſs of the Fluids. (4) Bruiſes, Ligatures, Compreſſion of the Arteries or Nerves, or Solution of continuity. Where the Motion or Feeling of only one ſide of the Body or of the whole, is intirely loſt, it's rare that Mineral Waters will have any great Effect; but where only one of them is diminiſhed, or tho' both be impaired, yet much may be done by a proper choiſe, and right uſe, of them; for the Intentions of cure being Attenuation, Stimulation and Reſolution; The common Vehicle it ſelf is diluting, the Minerals mixt with it, are attenuating the Salts are ſtimulating, and reſolving, of all the Waters thoſe of moſt note in this Caſe, are *Bath*, next to that *Harrigate*, drunk, and bathed in, the laſt made hot, or *Cheltenham*, *Buxton* has alſo been ſometimes found ſervicable. If the Diſeaſe be, as in, (1) Caſe ſtrong Chalybeats may be uſed, when the *Bath* is not attainable, which is alſo beſt in (2) As is either that, or the Salt Sulphur Waters in (3.) In (4.) Begin with *Buxton*, and end with cold Bathing; but the laſt admits of none. ---------- To this Diſeaſe may be refered, *Tremors* or ſhakings of the

Body, or any part of it: this ſeems to be a wavering of the Nerves and Muſcular Fibres, between their Contraction and Relaxation, from a viſcidity of their Juyces. When this Diſeaſe is hereditary, or peculiar to the Conſtitution as it's ſeldom dangerous, ſo there is little to be expected from the uſe of Waters: But if recent, and from hard drinking, ſtrong and frequent Paſſions, a late Fever, ſtoppage of Perſpiration, or ſome neceſſary Evacuations, the *Cold Bath*, or drinking and bathing in the tepid Waters, or warm Sulphur Waters, will be ſervicable -------- To theſe joyn we that Pricking, or Numbneſs of the Hands and Feet, commonly called Sleeping, which is an interrupted, irregular circulation of the Blood, moſtly ariſing from ſome preſſure of the parts, when the Body is at Reſt. If it happen without any preſſure or uneaſy Poſition of the Parts, it preſages a Palſy, and there is ſome fault in the Fluids: Therefore the danger is to be prevented and the Diſorder removed, either by the Waters mentioned for the Palſy, or cold bathing, Friction of the Parts, and Exerciſe, whereby the ſluggiſhneſs of the Humours may be taken off, and a free Circulation reſtored.

Fifth. An *Apoplexy*, when all the outward and inward Senſes, together with Voluntary Actions are ſuddenly aboliſh'd, from a partial, or total Obſtruction of the Animal Spirits out of the Brain into the Organs of Senſe and Voluntary Motion, and their return from theſe Organs into the common ſenſory; their free circulation in the mean time continuing to the Heart, and Muſcles of Reſpiration. This Diſeaſe is often threatened before it ſiezes, by it's common Foreruners. *Viz* ſwimming of the Head, dimneſs of Sight, Sleepyneſs, Numbneſs, Faulty Memory, Staggering, ſudden ſhooting pains in the Head, tingling Noiſe in the Ears, often ſighing, deep breathing with heaving and panting, and drawing the Noſtrils inwardly, Dullneſs, or heavyneſs and weight when laid down, Hagriding, and Night Mare &c. It's many, and different cauſes are beſt ſeen in *Boerhaves Aphoriſms*, and *Bonets Sepulcretum Anatomic*. Out of which we ſhall only glean a few of thoſe, wherein Waters are likely to be of uſe as 1 from a Viſcidity, thickneſs and phlegmatick Slugiſh ſtate of the Blood, common to aged, catarrhous, cold, moiſt, conſtitutions; diſcoverable from the Age, ſudden Lazyneſs, Dullneſs, Idleneſs and Sleepyneſs of the Perſon: He ſpeaks ſlower, is leſs diſpoſed to Motion and Exerciſe, his Eyes are fuller, paler, moiſter, and dimer; ſometimes he throws up Flegm, has Tremors Snoaring and *Incubus* in his Sleep, is ſomewhat giddy, breaths with unuſal Difficulty after Motion. (2) A too great fullneſs of the Veſſels, either with good Blood, or Flegmatic Humours. (3) A too ſtrong and full ſtream of Blood to the Head, whilſt the lower parts are deprived of their due quantity. (4) Violent paſſions. (5) Too long and great intenſneſs of the Mind on the ſame thing. In the firſt caſe, drinking the ſtrong purging Nitrous Waters, or chalybeate Nitrous, or Sulphur purging Waters, with Marine Salt is excellent; as *Cheltenham Cliff*, *Cartmal Weatherſlac*, *Holt*, &c. With dayly Riding, Fleſh bruſh, a ſuitable diet. In (2) uſe ſtrong evacuants, which neither heat nor rarify the Blood as *Cheltenham*, *Comner Tarleton*, *Holt* &c. In the (3) Tepid Bathing of the legs feet and thighs dayly, in *Buxton Matlock* &c. The ſame Waters with Equanimity, is adviſable in the (4). In (5) Exerciſe, Cheerful Company, frequent change of Ideas, chiefly of the pleaſant ſort, and the uſe of Chalybeate Waters are eligible.

Sixth. *Lethargy*, *Coma*, and *Carus*, all ſleepy Diſeaſes, near allied to an *Apoplexy*, only in the 3 firſt the Brain is ſeldom hurt, they being moſtly from a cold, watery, flegmatic Cauſe, for which the ſame Waters are neceſſary, and indicated as in (1) the *Apoplexy*.

Seventh. A *Catarrh*, whenever the watery parts of the Blood are encreaſed, and the Circulation in the Capillaries is languid, from a Relaxation and Diſtention of the Veſſels, the Serum becomes viſcid, from the thinner part being ſtrained off, and the thick and tougher remaining, it often falls on the Glands of the Windpipe, Head, Throat, Noſe or Jaws; hence a great flux of Water or Flegm from theſe Parts, which is called a *Catarrh*, which ariſes from catching cold, or from a moiſt, wet, foggy, or marſhy Air, from late ſitting up, or whatever diminiſhes Perſpiration; ſo as the Effects of this are often of long continuance. If little or no Fever attends it, when it becomes Chronic, daily riding in a clear, thin, dry Air; and a courſe of briſk Chalybeate Waters abounding with a Mineral Spirit, Volatile Steel Vitriol, and much ferruginous Earth, with a little Salt to make them ſomewhat Laxative, are beſt; for by theſe the groſs Humours are attenuated, ſet, and kept in Motion, till they be brought to their proper outlets, and there gradually, and inſenſibly diſcharged; the Veſſels at the ſame time being gently ſtimulated, and braced, they act with a greater Force, mix their Fluids better; fit them for the Skin and Kidneys, and at the ſame time keep the Belly ſoluble; and when this watery ſort of *Plethora* is leſſened, the Veſſels are gradully corroborated, the glandular Veſſels are are ſtrengthened againſt a freſh Dillatation & Lodgement of a new Load.

Eighth. To Diſeaſes of the Head, we ſhall joyn a more general Complaint, and obſtinate evil; which allays all Pleaſures, imbitters Life, lays aſide from uſefullneſs, and often ſhortens the ſufferers Days, but chiefly of the very beſt, and worſt of Men; this goes under the Name of *Nervous Diſeaſes*; the product of too long, cloſe and intenſe Study and Application of the Mind; too liberal an uſe of Animal Food, and Spiritous or fermented Liquors, eſpecially from Malt; Eaſe, Idleneſs, indulged Pleaſure, Intemperance, Whoredome, too recluſe a Life from open freſh Air, and Exerciſe; whereby the neceſſary and natural Evacuations are diminiſhed or obſtructed, the Animal Juices thickned, become viſcid, clammy and adheſive; ſoon looſe their natural, ſweet, ſmooth ſoft, nutritious, healthy, Qualities; become thick, ſharp, ſalt, and corroſive, or grummous and earthy. As the firſt generally paſs under the name of the Scurvy, ſo is the laſt called Vapours; whereby the *Nervous Syſtem* is weakend and relaxed, hence Weakneſs, Chronic, obſtinate & hereditary Diſeaſes, begun and fixt. Whatever the practiſe may boaſt off, from the uſe of *Saffron*, *Caſtor*, *Snakeroot*, *Gumms*, hot pungent *Bitters* volatile *Oyls and Spirits* of Animals and Vegetables *&c.* Yet it's more than probable, that did we begin where we end, *viz*, with the uſe of light Chalybeate Laxative (not Purging) brisk Mineral Waters, cold Bathing, Exerciſe, Temperence, Relaxation of the Mind, vegetable Food, a little light white Meat ſometimes, Abſtinence from Malt Liquors, and diſtill'd Spirits, or Mixtures made of them, the caſe would ſoon be altered; for inſtead of our rarely finding one quite cured, we ſhould ſeldome meet with one uncured, who applyed ſeaſonably, and perſiſted regularly in this Courſe; but then a great Branch of the Practiſe would be loſt, the uſe of Mineral Waters would ſhine forth in it's true Worth and Luſture, Diſeaſes and Diſeaſed would be fewer. But becauſe Aſſertion without Probation, will never down with reaſonabe Men, we proceed to prove this, which is done from, 1. The ſuitableneſs of the Contents and Principles of theſe Waters to the Caſe. 2 From their many viſible and great Effects. We ſay then, that to conſtitute this Diſeaſe, there muſt be 1. A *Retention* of ſome parts which neceſſarily ſhould have been diſcharged. 2. That this *Retention* will probably produce a *Congeſtion* and *Accumulation*, of ſome humours in the Body, whereby ſome Veſſels either of particular *Viſcera*, or in general over the Habit, muſt and will be diſtended, ſtimulated or irritated. 3. That Humours thus accumulated, can neither be of the moſt liquid, healthy, nor laudable and natural kind, for the more ſerous, deluting and ſweet will be carried off by the *Skin* or *Kidneys*. 4. The Veſſels being fuller and more dilated and diſtended, they will act with leſs Force on their contained Fluids, hence the Circulation will be ſlower. 5. The more thin and watery parts being ſtrained off, the Remainder will be more *Viſcid*, *Saline* or *Earthy*; and a viſcid, thick, Fluid, requires more ſtrength in the Veſſels to keep it in conſtant due motion. 6, But the Veſſels being both more dilated, and obliged to act with greater Force, than in a healthy Condition, their ſtrength and ſpring muſt inavoidably decreaſe. 7. And from both taken together, the bad Quality of the Humours will ſtill encreaſe more. 8. But the ſuperfluous *Sulphur*, *Salts* and *Oyl*, being chiefly to be thrown off by the Skin and Kidneys, and the coarſe, *Earthy*, *Flattulent* parts only, by Stool; when the firſt three are not duly diſcharged, it's plain the Kidneys act not their full part. 9. When the Blood is too thick, earthy and black, then volatile Salts and Spirits, hot pungent Bitters, bitter Sudorifics, ſtrong Purges, and Spirituous Liquors, muſt all act in oppoſition to a cure, and in ſtrengthening the Diſeaſe; ſince they either reſtringe the Veſſels, containing & undiluted, or ſtifly moving Fluid, or as they attenuate and thin the moſt ſerous parts of the Blood, and ſo expell them out of the Body, by ſweat, ſtool, and perſpiration, and render the reſt more thick, groſs and morbid; or as they encreaſe the Salts and Oyl of the Blood. 10. And as improper Medicines, ſo unſuitable Food heightens the Diſeaſe; for when the Blood is too Saline, Sulphureous or Acrid, animal Food will encreaſe theſe, and heightens the Diſorder. If the Blood is too thick, or viſcid, leguminous cooling, or ſpirituous Diet, muſt be very improper, *Cucumbers*, *Milons*, *Muſhroms*, *Cheeſe*, *Peaſe*. *Beans* and *Drams*, are very wide of a curative Deſign. Or if a rancid Oyl abound too much in the Body, all fat things ſhould be forborn, as they pall, relax and vitiate the Stomach, ſpoil Digeſtion, widen and ſtretch the Veſſels, and leave a rancid Taint in the Humours. Theſe things after our ſtricteſt Reviews, ſeem ſo plain, that we may lay them down as *Data.*

This Diſeaſe being a Species of the *Atrabilis* of the Ancients, ſaid to ariſe from choler, and is as *Proteus* a Diſtemper as the *Scurvy*, often is combined with it, or produced by it, and is very common. Whether it be from *Choler*, *Earthyneſs*, or *Thickneſs*, *Viſcidity*, or *Sharpneſs* of the Blood, has been long diſputed, to little purpoſe, for it ſeems to indicate the following intentions, viz. *Thinning*, *Attenuating*, and Cutting the *Fluids*, *Stimulating*, and *Invigorating* the *Veſſels*, looſing the Obſtructing Humours, and making them moveable, directing them to their proper Outlets, the *Kidneys*; keeping the firſt paſſage clear, and the Body Soluble, and preſerving the ſtrength. Now what Medicine in Nature can chalenge the preference, or an equality. with brisk, Spirituous, Nitrous, laxative Chalybeate Waters; nothing can poſſibly be better ſuited and adapted to the diſtemper, and all Intentions, and Indications attending it; for the common Vehicle thins the Blood; the ſpirituous and volatile parts penetrate, and make their way, into the ſmaleſt, obſtructed, pervious Veſſels, either along it's canal, or through the interſtices of the Fibres that conſtitute the Membranes; the nitrous Salts gently ſtimulate the reſty, diſtended Tubes, incide their viſcidities, and inſenſibly break their Coheſions and Adheſions, reſolve the Lentor, cools the Body, and the alcaline Earth, with the Salts, corrects that Acrimony; the Steel braces and ſtrengthens the Stomach and whole Body, whilſt by it's Gravity and Solidity, it acts with greater force upon the Fluids, joyns iſſue with the Salt, breaks and divides the groſs and thick parts of the Blood, cleanſes the inſides of the Veſſels from their adherent Lentor. The Salts being ſomewhat aſſiſted by the Bulk & Preſſure of the Water joyntly, irritates the Bowels, and keeps the Belly open. That the Water may anſwer theſe ſundry Deſigns, let it be aſſiſted by gentle Exerciſe. And to ſhake and looſen the Humours, rouſe and invigorate the Veſſels and Solids, cold Bathing muſt be added, where nothing forbids, for nothing ſtrengthens the Body more, braces the Nerves, and by it's preſſure on the ſurface, powerfully, and almoſt irriſiſtibly, propells the Humours in the external ſmall Veſſels, and throws them on the internal; where moved, mixed, and joyned with the other Blood, the ſudden ſhock & commixture drives them ſtill forward to the larger Veſſels, and thence to the Kidneys, where vaſt Quantities of Salts, Oyl, and Earth are ſeparated from it, and there thrown off in Urine. At the ſame time, the thick ſaline Humours on the Surface in the Secretory and Excretory Ducts of the Skin, are attenuated, and by the ſudden Contraction are powerfully thinn'd, rendered fluxile and moveable, and by the Glow of Heat following, on the Relaxation of the Veſſels, theſe Humours are thrown off. The Surges of Blood thrown on the Spleen and Liver, ſhake, move, and bring into Motion the groſs adherent and Saline humours in theſe *Viſcera*, whereby they Diſcharge apart into the next Veſſels, for ſeveral Circulations after each immerſion; juſt ſo much whereof is ſufficient as may fully apprize the Body of it's preſſure and Contraction. Thus while the Minerals in and with the Water, act their parts inwardly, the cold Bath fully perform It's Office outwardly, which tho' externaly, yet ſends it's Effects to the moſt Minute internal parts, encreaſes all the Secretions and Excretions of the inward Viſcera, as is viſible from the Urine, which is in large quantity after, & more highly tinged, & from the Kæneſs of the Appetite, and good Digeſtion, from the Baths bracing the Solids, encreaſing the Secretion of Bile and Pancreactic juyce; thus both inward and outward Evacuations are promoted and increaſed by cold Bathing. But, beſides the Likelyneſs & Suitableneſs of Chalybeat Waters to this Diſeaſe, we have 2 The Experience of many Thouſands who have really found that Relief and reaped that Benefit they deſired, but in vain expected from Medicines. How few are cured by the laſt? How few, not come to the moſt deplorable ſtate of the Diſeaſe miſs of cure by the firſt, if uſed regularly and for a due time; ſo that we have not only Reaſon, but the Experience of many Ages on our ſide The plain Spirituous Steel Waters here intended, are, *Benthall*, *Tuewhet Spaw*, *Aſtrope*, *Fulwood*, *Stockbond*, *Brockhole*, *Knowſley Cannock*, *Litchfield*, &c. The Gentle Laxative are, *Cliff*, *Binley*, &c.

Ninth. We ſhall now briefly conſider ſome of thoſe Obſtinate Diſeaſes of the *Eye*, which are relieved by Mineral Waters. And 1 An *Inflammation* either outward, wherein the Blood in the Capillary Veſſels ſeems to Stagnate, and makes the Veſſels viſible in the White of the Eye; and is leſs or more hot, painfull and prickling, with a roughneſs. Or inward, when the Blood Veſſels compreſs the optic Nerves, and prevent the due and neceſſary influx of Spirits into the Eye; tho' there is no Viſible Inflammation, yet the Air ſeems to them full of Cobwebs, Atoms or Flies. In obſtinate outward Inflamations, waſhing the Eyes dayly either with ſome Chalybeate, Sulphur; or drying Limeſtone Water, is very good; *Holt* Water is far more powerful; and *Ichley*, *Willowbridge*, and indeed all the intenſely cold bath Waters ſeldom fail to cure, only by bathing, and often waſhing the Eyes in them. The inward Inflamation, if it continues long, turns to to a *Gulta Screna*, a courſe of the moſt Spiritous light Chalybeats may be uſed with a proper Regimen, and Riding; let the Head be ſhaven and waſhed every morning in cold Water, tho cold Bathing may not be ſo adviſable here. 2. If the outward Inflamation laſt long, or the Glands of the *Canthus* are much dilated, a *Flux of Rheum*, or Blood, falls down like Tears. 3. When the Blood is either in too great a Quantity, or too ſharp, there ariſes a ſwelling, between the great *Canthus* of the Eyes, and the root of the Noſe, called *Anchylops*. 4. When this little Tumour breaks, it's called *Ægilops*, & when it's ulcerated, & gives vent to involuntary Tears, it's then named *Fiſtula Lachrymalis*. 5. If the ſmal Caruncle of the great *Canthus* is either leſſened or loſt, by an Afflux or diſcharge of ſharp corroding Humours, it's termed *Ryas*. 6 But if that Caruncle diſtends, turns large and high, and becomes Spongy, it's called *Encanthus*. 7. When a load of ſharp Humours fall on the *Uvea*, and dilate the Pupilla it's a *Mydriaſis*. 8 If either from a fullneſs of the Veſſels, or ſharpneſs of the Humours in the *Uvea*, there happens a Rupture of It's Veſſels, and a Collection of Matter under the *Cornea*, it's a *Hyppopion*. 9 If from a ſharp Humour in the Watery part of the Blood, there breed and appear in the *Cornea* and *Tunica adnata*, ſmall Bladders fill'd with Water, its called *Phlyctenæ*. 10 A Blearedneſs, from a Defluxion falling upon the Edges of the Eyelids, *&c.* All theſe diſorders proceeding from too great a plenty, Viſcidity, or ſharpneſs of the Blood and Humours, whatever therefore corrects theſe, cures the Maladies, before they are become inveterate. Therefore *Ichley*, *Willowbridge*, Chalybeate or Sulphur Waters riſing out of Limeſtone, are very proper to waſh the Eyes dayly at the Spring. So blind *Walter Aſton*, and *Mr. Collins*, were reſtored to their ſight by waſhing dayly ſeveral Weeks in *Malvern* holy Well; and *Mrs. Smith* who got her ſight by drinking, and waſhing her Eyes dayly with *Cheltenham* Waters; but in Ulcers, and any great Relaxations, *Holt* uſed inwardly and outwardly, will do wonders. For theſe Waters correct the Acrimony, dilute the Blood, brace the Veſſels, cleanſe, dry, and heal the Ulcers; help to contract the dilated parts, and bring down Spongy Excreſcences. Two things muſt convince us of the Efficacy of Mineral Waters here. 1 The Exceeding ſmallneſs and penetrating nature of their volatile parts. 2 The thinneſs and poroſity of the Membranes of the Eye, which can contain the aqueous Humours a very little time, as we ſee from the quick ſubſiding of dead Peoples Eyes, if not ſoon ſhut, but when cloſed, they continue much longer full; ſo that the withering of the Eye, is not meerly from the contraction of it's Membranes, and Veſſels, but alſo from the Waſte of the Watery Humour it's ſelf.

Tenth. To Diſtempers of the Eyes, we ſhall joyn ſome of the noſe; If a great Stoppage of the Glands and of the Noſe, with a pain of the Head, ſhall be ſucceeded by too plentiful a diſcharge made by the Glands, inform of a Catarrh, It's called *Coryza* for which, drinking ſtrong Vitriolic, but eſpecially *Holt* Water, and often ſnuffing them up the Noſe, is very ſervicable, 2 If from ill treated Ulcers, Wounds, or Bruiſes of the Noſtrils, there happens to be a diſcharge of ſharp, Stinking, Sanious matter from the Noſe, often mixt with Blood, it's an *Ozena*, for which we adviſe often waſhing the parts and ſnuffing up of ſome ſtrong Sulphur Limeſtone Water, impregnated with little or no Salt, which might occaſion too violent ſneezing; or *Holt* Water, lowered with a little common Water; or where neither can be got, *Vitriolic* Water may be uſed; the Water ſhould be drunk at the ſame time. 3 An outward Ulcer on the wing of the Noſe, from a ſharp corroding Humour, is called *Noli me tangere*, for often the more it's tampered with, the worſe it is, being of the nature of a cancer; dayly waſhing with Limeſtone Sulphur Water, or eſpecially in Sulphur Chalybeates, and applying to the part, the Sludge or Clay in the bottom of the Receiver, are of the moſt probable uſe.

Eleventh. It's no rare thing for hard drinkers, or ſuch whoſe Blood is viſcid or acrimonious, to have a dryneſs, whiteneſs, roughneſs and furridneſs, of the Tongue and Mouth; in the firſt caſe, the uſe of the tepid Waters is the beſt Relief; when from the ſecond Chalybeates ſhould be drunk with Exerciſe; in the laſt, either brisk ſmall Chalybeats or tepid Waters, for both theſe contain ſuch a ſcantling of Salt, as can give no ſenſible Addition to the Salts of the Blood. The Tongue and Mouth may alſo be infeſted with Ulcers from ſeveral Cauſes, but if not Sinuous, frequent waſhing them, with ſtrong Chalybeate or Sulphur Waters, cures them. An Hyſteric or Hyppocondriac Toothach, being only Symptomatic, find Relief together with thoſe Diſorders, from a courſe of Chalybeate Waters, and Exerciſe. Or if the Diſeaſe be habitual, from an Acrimony or Viſcidity of the Juyces, the Teeth not being carious, rotten or hollow, it's cured by ſuch VVaters as ſweeten, ſoften, and abſorbe.

Twelfth Pains in the Ears, Dullneſs of Hearing &c. Are not helpleſs from Waters. *Ex: gr:* If the thickneſs of Hearing be from a ſtoppage of ſome Evacuation, the VVaters that reſtore theſe, are uſefull in removing this Effect. Or if it's from traveling in a moiſt Air, Or from catching cold, or any other cauſe which may relax the Drum of the Ear, bathing in the hot Waters with the Ears ſtopt, and going to Bed and ſweating after it, will be of great ſervice; if at the ſame time the Patient is temperate, and drinks of the Waters tepid. If from impoſtumation or ulcers, they are quickly cured by waſhing or ſlightly injecting into them twice or thrice a day, ſome drying, ſtrong, tepid Sulphur Water from Limeſtone. The ſame will happen when the Deafneſs is from much wax in the Ears, but then let a little White-wine or Brandy be mixt with the Water.

Thirteenth. A *Conſumption*, This is a word of as lax or indeterminate a ſenſe as Scurvy, Nervous Diſorders &c. Implying any Diſtemper whereby the Body is emaciated and weakened, whether with, or without a *Hectic*, *Cough*, or *Aſthma*, however, as I go along, I ſhall explain what we mean and intend, and when or which Mineral Waters are preferable in each Caſe. If the flux of Rheum, or ſharp Serum in a Catarrh fall on the Lungs, it occaſions an almoſt continual tickling cough, and ſpitting of a thin Watery humour. Here ſuch VVaters as correct the Acrimony, Sweeten the Blood. and encreaſe the diſcharge of the irritating Salts are proper, as either the mild, tepid, or Chalybeate VVaters, which contain pretty well of alcaline Earth, as *Matlock*, *Stonny Middleton*, *Benthal*, *Binley*, *Aſtrope*, &c But here we underſtand the Diſeaſe neither recent, nor accompanied with much Fever. -------- 2 A conſumption from ſpitting, or vomiting of Blood. If from an Obſtruction of the Menſes, or Humorrhoids, it muſt be cured by ſuch Waters as provoke them, *Viz* briſk, light, laxative Chalybeates. -------- If from a fullneſs of Blood, or hard drinking, bleeding, temperance, Exerciſe, and cooling Nitrous purging Waters, as *Cheltenham*, *Comner*, *Moretonſee Pump*, *Kirbythewer* are adviſable. -------- If from exceſſive Motion, Bleeding, Reſt and Equanimity muſt be purſued, and perſiſted in. -------- If from the thinneſs or ſharpneſs of the Blood, or weakneſs of the Veſſels, Chalybeate VVaters. well ſtored with ferruginous alcaline Earth, as moſt of that Tribe in Lincolnſhire or Northamtonſhire, generally are, or *Thoroton Binley*, but above all *Holt*: L: Will do wonders; eſpecially as Vomiting any large quantity of blackiſh venal Blood, is preceeded by a weight at the Stomach, from whoſe Veſſels it's ſaid to be diſcharged; therefore the VVater being poured into it acts with a trible force, Scill: Of a Medicine, of the cold Bath, and of an immediate reſtringent Application to the place; hence it's no wonder that we find many ſurprizing Cures of this ſort, done by Mineral Waters. -------- 3. Conſumptions from the *Kings Evil*, *Scurvy Ulcers*, *Aſtrophy*, obſtructions of neceſſary or uſual Diſcharges, ſhall be conſidered afterwards. ------ 4. A conſumption from a vomica in the Lungs: i: e. A Latent unbroken collection of Matter; here the cure is not to be attempted by Mineral Waters, for they will only encreaſe the diſorder, and Fever. But the Diſeaſe ariſing from Tubercles of the Lungs, has been frequently cured by a regular courſe of Light, briſk, thin Chalybeates, wherein is ſcarce any thing beſides a volatile Steel. As *Aſtrope*, *Stockbond*, *Benthal* &c. ------ 5 A conſumption from an Ulcer of the Lungs, wherein purulent, fetid matter mixt with Blood, is cough'd up and Spit, if the matter is white and well digeſted, attended with an Appetite and digeſtion, no thirſt nor Fever, the Secretions and Excretions due and regular, the matter anſwerable to the largneſs of the Ulcer, and eaſily ſpit up; often has, and ſtill may be cured by proper Mineral Waters, eſpecially the ſtrong Sulphur and Chalybeate tribes having little or no Marine Salt in them. As *Thoroton*, *Cliff*, *Binley*, &c. -------- 6

Conſumptions, from either a collection of purulent matter, Lymph or Blood, diſcharged into the Cavity of the Breaſt, between the *Pleura* and Lungs, is incurable by every thing but the Knife ſeaſonably and judiciouſly uſed by the dextrous Surgeons hand. ------- 7 Conſumptions from a ſlow waſting, peripneumonic, hectic fever, find greateſt Relief from ſoft Nitrous Calcarious Waters in ſo ſmal a Doſe as not to purge. But beſides theſe, we have met with abundance of cures of this Diſeaſe, done by plain light Chalybeates, drunk from three to five Pints, dayly and in a leſs Doſe they are rarely found ſucceſsfull, and as ſeldom fail in that or a larger Quantity. ------- 8 Conſumptions from profuſe ſweating, are cured by cold Bathing, drinking chalybeate Waters, Riding and thin cloathing ------- 9 Conſumptions from a *Diarrha* or Dyſentry, yield to a courſe of ſtrong reſtringent Chalybeates, which have very much Ochre and little Salt, with very moderate Exerciſe, and proper diet. Conſumptions from too profuſe a diſcharge by urine, ſee under the Article Diabetes. ---------- 10 If the Reſult of the Depreſſing paſſions, Grief, Sorrow &c. Dayly riding, chearful company and converſation, with frequent change of Ideas, artfully induced, and drinking light Chalybeates, highly impregnated with the volatile Principles. are of peculiar ſervice. When the diſeaſe is from hard Study, or too great Application of the Mind, theſe muſt be laid aſide, and the laſt courſe purſued. --------- 11 If from chalk Stones bred in the Lungs, a long uſe of Chalybeate Waters has been found effectual, but as this cauſe is ſo hard to be diſcovered, ſo except it were known, it is difficult to preſcribe the fiteſt courſe. If from polypous concretions in the pulmonary Veſſels, ſpirituous, freſh Chalybeates, and Exerciſe, will ſtave off the conſequence, as long as any thing. ------- 12 When from Obſtructions of the Lacteals, ſtrong Nitrous Chalybeates with Exerciſe are beſt. -------- 13 If from a *Tabes Darſalis*, Venery, and Converſation with Females muſt be avoided, and a rich, ſoft, ſmooth, nouriſhing diet, with cold Bathing will ſuit it beſt. ------- 14 If the diſeaſe is hereditary, or from a Maleformation of the parts, or Contagion, we know of no Waters to depend upon. ------- 15 That from outward cauſes, as a moiſt foggy wet, Sultry Air, Marſhy Situation in the firſt three and laſt caſes; Chalybeate Waters, Exerciſe, and if there is no fever, cold Bathing, if a fever, Chalybeates drunk and tepid bathing. ----- 16 If from Bruiſes or blows on the Breaſt, after diſlodging extravaſated

travaſated Blood, leſſening it's quantity by Bleeding, and preventing it's lodging and ſettling in any part of the *Thorax*, then the Patient may uſe Exerciſe, and Chalybeate VVaters, (*but chiefly Holt.*) Exerciſe, and ſtrong, Spirituous Chalybeates are adviſable, when the Diſtemper is from foods of hard Digeſtion, or of a Viſcid, tough Nature, communicating the ſame quality to rhe Blood, -------- 17 VVhen it's from whetting, or too much freedom with VVhite VVine, whoſe Tartar in the Blood, corrodes and wears the Sides of the Veſſels, eſpecially in the Lungs, we recommend firſt drinking of the warm VVaters, then conclude with ſtrong Chalybeates and Exerciſe, to brace up.

Fourteen. A *Cough*, if from (No. 13: 14:) comes not within our deſign; but theſe which are the Effect of ſome Errours in the Non-naturaly, or unwholeſome Air; theſe are occaſioned by too great a load upon the Sanguiferous or Lymphatic Veſſels of the Lungs; or from a ſtrong continued Irritation of the Veſſels themſelves, by ſome ſharpneſs in the Fluids. A fulleſs of the Veſſels may ariſe from whatever may diminiſh, or obſtruct perſpiration, over the whole Habit; as *cold Catching*, cold or moiſt Air, ſudden Alterations of Weather from one extream to another, lying in wet or damp Cloaths, change of Cloaths, late Sitting up, wet Feet; or whatever may ſtretch and diſtend the abdominal, and thoracic Veſſels ſuddenly, or immoderate Draughts of cold Water, ſmal Beer, or the like, when the Body is very warm; or the Veſſels of the Lungs may be ſtuff'd with tough viſcid Fluids, not ſuſceptable of due and regular Motion by the preſent ſtrength of the Heart and Veſſels; from feeding on viſcid, cold Meats and Drinks, as Cheſe, Muſhrooms, Melons, Cucumbers, Peas, Beans, Malt Liquors &c. From Idleneſs, Remiſſion or neglect of neceſſary Exerciſes; or from a general viſcidity of the whole Fluids in the Body, as in a Cachexy, Dropſy, &c. An Acrimony of the Blood may be owing to a too free and indiſcreet uſe of fermented Liquors, as ſtale Ale or Beer, pricked Wines, or thoſe abounding with Tartar; rough, acid, aſtringent, Salt, oyly, rancid Things; Food too often dreſs'd with pungent ſaline Spices, Sauces; a Retention of the urinous Salts which fall on the Lungs; a ſcarcity of proper healthy food; a want of ſmooth freſh chyle thrown into the Blood, in due Quantity at proper intervalls &c. All which indicate thinning and leſſening the Fluid, opening the natural

Diſcharges by urine and perſpiration; preventing the Impetus of the Humours upon the Lungs, correcting the ſharpneſs, and ſweetening the Blood; and ſtrengthening and reſtoring the Tone of the Solids. Theſe are obtained from a courſe of Chalybeat Waters, ſomewhat laxative. If the Diſeaſe is recent from a Load of perſpirable matter retained; without a Fever, tepid Baths come in good play at firſt, to thin the Humours, in the excretory Ducts of the Skin, relax the Veſſels and widen the braced up pores, after which, the cold Bath will reſtore the Tone of the parts. But if the Lungs are tainted we allow of no Bathing, when a Cough is only from the Sharpneſs of the Humours. ſuch VVaters as contain a moderate quantity of alcaline Earth, are good, if from a Straitneſs of the Veſſels of the Lungs, without the leaſt Hectic, Buxton puts in the faireſt for Help. VVhen from a Viſcidity of the Juyces, Chalybeates come in eſpecially ſuch as have much volatile Steel and ferruginous Earth and ſome Nitre. But with all of them, riding, ſeaſonable Hours of going to Bed, and riſing, Abſtinence from Fleſh, and ſpirituous Liquors are abſolutely neceſſary. If the Cough come from Gouty Humours thrown on the Lungs in the decline of Life or Conſtitution, the Bath muſt be viſited and it's VVaters drunk. If it attends a jandice, it ſhows the Obſtructions of both abdominal and thoracic viſcera to be general, where nothing but the ſtrongeſt laxative Chalybeate or Sulphur VVaters can do.

Fifteenth. An *Aſthma* or ſhortneſs of Breath, which admits of ſundry Degrees, for if it's only quick, without any other trouble, it's a *Diſpnœa*; but if the Patient can only find eaſe in an erect poſture, it's an *Orthopnæa*; ſometimes it's only Symptomatic, as in a *Dropſy*, *Empiema*; ſometimes it's from obſtructions of natural and neceſſary Evacuations, as the *Menſes* &c Sometimes the Effect of metalic Sceams, or of chalkey Concretions in the Lungs; or of *Polypus*'s in the pulmunary Veſſels, or from adheſion of the Lungs to the *Plura*; or of groſs, ſtronger feeding than is ſuitable for weak, or ſtuffed Veſſels; or often plentiful Ale drinking with a little Exerciſe; or from the *Thorax* being ſo full of Fat, that the Lungs have not room to play; or from an Inflammation of the neighbouring parts of the *Pleura*, *Mediaſtinum*, *Midriff*, *Intercoſtal* or *Pectoral Muſcles*; or from the weakneſs of the Spring of the Air, which is incapable to expand the Air Veſſels, and compreſs the Blood Veſſels of the Lungs &c. When the Diſeaſe is from a ſuppreſſion of the Menſes, or Hyſterics, ſpirituous light Chalybeates and Exerciſe are proper. If from a fullneſs of the Lymphatics, *Holt* or *Cheltenham* is excellent. When this fullneſs is attended with Syzineſs, Sulphur Wells, which contain little Earth, are more ſtimulating, heating and drying therefore beſt for a ſlow circulation and ſluggiſh Veſſel. When it's from the Hyppo, Cachexy, or Lentor on the inſides of the Veſſels, ſtrong, briſk Spirituous Chalybeates are beſt, but exerciſe muſt not be neglected. When the diſtemper is from a languidneſs, or Relaxation of the Muſcles of Reſpiration, cold Bathing muſt be added. If from a ſtiffneſs or contraction of thoſe Muſcles, the inward and outward uſe of the natural tepid Waters, is moſt ſignally beneficial.

Sixteenth. A *Pulpitation* or immoderately violent and quick Motion or pulſation of the Heart, may ariſe from various cauſes, in different Bodies, as from a violent fever, or polypous ſwellings, bony Carthilæginous or Schirrous Tumours, or Worms in the Heart, or it's pericardium. In theſe caſes it's in vain to expect Relief from Mineral Waters. But when the Diſeaſe is from Hyſterics, Hyppo, Cachexy, Or *Menſes* ſtopt; Chalybeate Waters drunk immediately at the Spring, with Riding, will afford Help, if drunk regularly a due time. If it's from a ſudden retreat of Scorbutic Humours, Inflammators, or other Erruptions from the Skin into the Body, or from a load of ſuch Humours in the Blood, imperfectly expell'd, drinking and bathing in the naturally tepid Waters, will be ſervicable; or in the want of ſuch, drinking Waters highly impregnated with Sulphur, but little or no Marine Salt, for this diſeaſe wants no Stimulus. If It's from violent Exerciſe or Labour, paſſions of the Mind, Heat, Venery. hard drinking &c. Reſt and refraining from the procuring Cauſes, will lay the Hurricane, except they are often repeated, to weaken the Conſtitution, and render the Diſeaſe chronic. If it's from the depreſſing Paſſions, Chalybeates, Exerciſe, and cheerful converſation, are not only helpfull, but curative. If from putrid ſharp Humours in the Blood, ſoft, ſmooth, tepid (not hot) Waters are beſt, for they dilute, relax and ſweeten, at the ſame time; they prepare the irritating matter for Expulſion, and dayly leſſen it, ſending it off by the Skin and Kidneys. but whatever be the cauſe, all violent Exerciſe, paſſions, and ſpirituous Liquors, are juſtly reputed Aiders and Increaſers of the Diſeaſe, and therefore to be avoided.

Seventeenth A *Syncope*, or ſudden ſwooning and fainting away from a quick Stoppage, or leſſening of the Motion of the Blood. If from Bloodlet, laying the Body horizontal, and giving it free open Air, is ſufficient if from the Menſes obſtructed, Hyſteric or Hyppo, it muſt be treated with Waters ſuitable to thoſe Diſeaſes, the many other cauſes of this Diſtemper, belong not to Mineral Waters.

Eighteenth. A *Surfeit*. Tho this is ſeldom met with as a diſeaſe, in Phyſical Authors, but a cauſe of many Diſeaſes, yet as cuſtom has prevailed to make it an eſſential Diſtemper, we ſhall conſider it as ſuch. It is always the Effect of an Errour in ſome of the Non-naturals, eſpecially 1 from ſtoppage, or diminution, of perſpiration by ſtriping and expoſing the Body to the Air, when it's very hot. Continuing the whole or ſome part of the Body wet and at reſt. Sudden changes of weather from Sultry hot, to piercing cold Blaſts. 2 From too ſtrong Exerciſe, increaſing the Bloods Motion and Rarefaction, where by a greater ſhare of it is thrown into the Capillary Veſſels, where the globules being divided into many parts, get into too narrow Tubes, and there form Obſtructions in any part of the Body, or if, upon this ſudden Rarefaction of the Blood, the Perſon is too quickly cool'd; hence the Veſſels will contract; and too large Particles of Blood will be ſtopt ſo as they cannot paſs on, to their proper outlets. But this diſeaſes ofteneſt ariſes, 3 From intemperance by overcharging the Stomach and Bowels with Food, whereby Digeſtion being weakened, the chyle muſt be Crude, Viſcid, and paſs off ill prepared, laying Obſtructions in the Lacteals, or other parts of the Body. And alſo 4 by indiſcreetly crambing the Stomach, with ripe or unripe Fruits of the cold and viſcid ſorts eſpecially, as *Apples*, *Cherries*, *Gooſeberries*, *Currans*, *Cucumbers*, *Plums*, &c. Or 5 by laying a moderate doſe of wholeſome Food on the Stomach, but either unſeaſonably taken, or of too ſtrong digeſtion. 6 This diſorder may alſo be the Effect of too great an Indulgence of Malt Liquors; Water, ſmall Beer, or bad Ale, Milk, or Milk and Water, drunk either in hot Weather, or when the Body is too hot. -------- It is therefore plain that moſt of theſe cauſes induce a viſcidity in the Animal Juyces. And if this Viſcidity

cidity happens to lye in the Stomach, and inteſtines, till it turns ſharp and irritating, it then produces Vomiting and Purging, whereby the Body is happily relieved at once; If it reach and reſts in the Lacteals and obſtructs them, it taints the whole Maſs, if it fall on the Liver Spleen or Pancreas, it occaſions a Cachexy, Jandice, Hyppo, Hiſterics, Dropſy, Schirrus or Ulcer; If it ſetties on the Lungs, it begets a Cough, ſhortneſs of Breath or Conſumption. when it reaches the Bodies ſurface. It cauſes Scab, Swellings, Ulcers *&c.* When it fixes in the Lymphatics of the Muſcles or Membranes, it turns out a Rheumatiſm, Erratic pains, Gout, Siatica, or the like. So that a ſurfiet is neither a diſtemper, nor the immediate cauſe of it, but only the remote or mediate cauſe If the ſurfiet was from Drunkenneſs, or too much freedom with Spiritous Liquours, or from high ſeaſoned or inflammatory foods, it often ends in an inflammatory fever, as Pleuriſy, Peripneumony *&c.* But from whatever cauſe it is, the Effect will be in proportion to the cauſe, and the preſent ſtronger or weaker, healthier or ſicklyer Conſtitution of the Patient. When the diſeaſe diſcovers it's ſelf in the Lacteals, Liver, Spleen, or Pancreas, ſtrong Laxative ſpirituous Chalybeates are of chief uſe, as, *Aſtrope*, *Thoroton*, *Cliff*, *Stockbond*, *Binley*, &c. If it turns on the Membranes or Muſcles in arthritic or Muſcular pains, the inward and outward uſe of the tepid Waters is firſt indicated; then let the cure be finiſhed with cold bathing (except in the Gout) and Chalybeates. When the Skin proves to be the Seat of the diſeaſe, drinking and bathing in the Sulphur Waters, is moſt beneficial, then alſo conclude with cold bathing. When the Lungs are affected, pectorals, with drinking Chalybeates and riding, are moſt proper, but here we exclude cold Bathing. If the Diſorder reaches no further than the Bowels, it quickly goes off in a Looſneſs, which if obſtinate and watery, it's from a Relaxation of the Inteſtines, and requires warming Bitters, with ſome alcaline earthy Water, as *Kirkbythewer*, *Mortonſee* Pump or laxative Chalybeate with much Ochre; or what exceeds all *Holt.* If the looſeneſs is attended with terrible Gripes and great pains, it's from ſharp Salts irritating the Bowels, and requires ſweet, ſoft, abſorbing Waters; or the petrefying Waters. Now for ſome of the Diſeaſes of the Stomach, which are curable by Water.

Nineteenth. *Loſs of Appetite* or *want of deſire to Food*, this may proceed from a Languidneſs or Relaxation of the Stomach, or a want of that glandular juyce neceſſary to excite Hunger; or deſtroying the Tone of the Stomach by hard drinking, or a load of tough Humours lodged upon it, or want of Exerciſe; or palling the Stomach with unreaſonable Quantities of tepid weak Liquors. As *Tea*; or exceſſive Smoaking of *Tobacco*; which hurts either by it's narcotic Quality, or by draining off the *Saliva*, which ſhould malax our Food in the Mouth, and promote digeſtion. Or from the want of ſome natural or uſual Evacuations, or from too watery a ſtate of the Blood; or coldneſs of the Body. If the Diſeaſe be the Effect of ſome obſtructed or diminiſhed Diſcharge; or want of glandular juyces, or exceſſive *Tea* drinking, or Smoaking, Chalybeate Waters are certainly beſt, as *Cliff*, *Aſtrope*, *Tarleton* &c. And leave off *Tea* and *Tobacco*. If from exceſſive draming or whetting Steel or tepid Waters ſuit well. If from too great a fullneſs of the Veſſels, let Blood. If from a foul Stomach, or much thick ſluggiſh Flegm lodged in it; and the inteſtines, *Holt*, *Cheltenham* &c Are fitteſt. If from meer ſluggiſhneſs & relaxationof the Stomach, Wateryneſs of the Blood, ſlow Circulation and a coldneſs of the Body, *Holt and Cheltenham* exceed all, then *Moffat*, *Cunley-houſe*, *Sutton Bog*, *Wiggleſworth*, or the Chalybeates well ſtored with Salt and Earth. If the Diſtemper ariſes from a continuance of the depreſſing paſſions, or an idle Sedentary Life; which has weakened the Spring of the Solids, the uſe of the brisk Spirituous Chalybeates, at the Spring, with Exerciſe is required. -------- 2 want of *Digeſtion* with, or without an Appetite, this may proceed from a load of Flegm lying in the Folds or Values of the Stomach, between it and the food to be digeſted, or by wearing out the Tone of the Stomach, by a too great former indulgence of a voracious Appetite; A hurtfull freedom with Malt Liquors; too much Sleep; great weakneſs of the part, from immoderate Evacuations, either upward or downward; Idleneſs, &c. The cauſes of this Diſorder being pretty near the ſame with the laſt, the ſame Waters adapted to the like caſes are adviſable; except it be attended with ſome other diſtemper, as jandice, dropſy, bad habit of Body, &c. Then the Waters ſuitable in theſe, take place here. 3 A *Doglike Appetite*, ariſing from a Laxneſs of the Stomach and Bowels, which having loſt their retentive Faculty, ſuffer all Food to ſlip through them crude and indigeſted; here we would chiefly recommend *Holt*, *Cheltenham*, &c. Or from Neſts of Worms extending and crawling in the Bowels, which devour the Food that ſhould nouriſh the Body; here all the Saline Sulphur Waters take place, and next to them Springs moderately impregnated with Marine Salt, or purging Chalybeates. A Redudancy of Acid Humours in the Stomach or Guts, too great a diſcharge of Acid juyces from the Glands of the Stomach, ſtimulating it's Coats, and exciting a Senſation of Hunger; ſuch was that epidemic which raged all over *Ferrara* in 1538: And *Leonell*: *Faventin*: Says, it was the ſame in his Country in 1535. When the caſe is chronic, Waters well ſtored with Alcaline Earth and a little Nitre are beſt, the firſt to correct the ſharpneſs of the Humours, the laſt to expell them the Body. Laſtly it may come from an Atrophy of the whole Body, when the nutritive parts of our food are quickly hurried out of the Body, either by Stool or Perſpiration, before they have made their Neceſſary ſtay, to be attached to the ſides of the Veſſels, which at the ſame time are not duly diſtended with Fluids, they being carried impetuouſly through the Skin. Here we adviſe cold Bathing, and drinking of ſoft tepid Waters, with a Milk diet. -------- 4 A *Depraved Appetite*, or longing for ſuch things as are not only unwholeſome, but unfit for Nouriſhment, this is often the caſe of Pregnant Women, about the ſecond, third, or fourth Month; or of the Children, either whoſe Mothers deſires have not been gratified, when with Child; or of children ſcantily ſuckled and ill kept, or of Virgin's in a *Chloroſis* or *Cachexy*, or of *Hypp'd* Men; the diſeaſe in all theſe caſes, except the two firſt, ſeems to ariſe from an acid Humour in the Stomach, which indicates the uſe of abſorbent earthy things, hence they long for Chalk, Aſhes, Cinders, *&c.* When It's the caſe of Children careful keeping, watching them ſtrictly; wholeſome light food of eaſy digeſtion and good Nouriſhment are thought ſufficient. When from *Chloroſis*, *Cachexy*, *Hyppo*, drinking Chalybeate Waters and dayly riding are beſt. -------- 5 *Loathing* and *Vomiting*, if from poyſons ſwallowed, inflammations, or wound of the Stomach. Waters are out of the Queſtion. If from a *Chloroſis*, *Cachexy*, *Palſy*, *Hectic*, recourſe may be had to Waters proper in theſe Diſeaſes. If it happen to pregnant Women, Waters are not adviſable, but reſtringent Stomachics, after Lenitives. If from Worms Saline Sulphur Waters are beſt. When It's from Obſtructions, Chalybeates, eſpecially laxative, muſt be choſen. If from Colic or Iliac paſſion, it's only ſymptomatic, and the removal of the Cauſe will take off the Effect. If from too much freedom with Spirituous Liquors, as Wine, Punch, or Malt Liquors, which not only leave a Stimulus but Viſcidity; tho the naturally tepid Waters are beſt, Chalybeates next, yet moſt of the Mineral Waters plain or laxative, will do, with Exerciſe, the ſame we ſay when the diſeaſe is from whetting, or draming. If the Vomiting is become Cuſtomary and has weakened the Stomach, *Bath* Waters are beſt, then *Buxton*, after them Chalybeates to brace up. If it's from ſharp Salt humours, lying upon, and irritating the Stomach, we adviſe *Scarburgh*, or any of thoſe that contain much alcaline Earth, and are laxative at the ſame time; or *Buxton* from it's diluting, gently relaxing and warming properties. If it's from gorging down either too much Meat, or Meats of a ſtrong, viſcid, unaccuſtomed, or diſagreeable nature, after due diſcharges. Uſe *Harrigate*, Sulphur Water, *Stanger*, *Weatherſlac*, *Maudſley*, If it's of long continuance, in Gouty people, on the decline of Life eſpecially, drinking Bath Waters is preferrable to all. If from Ulcers or Abſceſſes of the Stomach, if they are ſmall, all the calcarious Waters are uſeful, being drying and healing; but *Holt* chalenges the preference of all. If from Flegm, Bile, or crudities lying on the ſtomach, *Scarburg*, *Weatherſlack*, *Harrigate*, *Stanger*, *Cheltenham*, will do wonders. If from any Tumour, Excreſcence, Schirrus or other unnatural Body lodged in the Pylorous, no Waters can be ſuppoſed to be of great Service; but if any palliation may be expected from them, it's from *Buxton*. Vomiting has been found the effect of *Opium*, or *Liquid Laudanum* taken either unſeaſonably or in too large a doſe, but this like Sea ſickneſs, goes off moſtly in a few hours, plunging in cold Water, and Bleeding, have hitherto been look'd upon as the greateſt Antidote, tho' I can neither ſee the Reaſon, nor ſucceſs of it from the patrons of this Theory. But I have ſeen three extraordinary cures performed in this caſe, by pouring down Water, with Spirit of Vitriol, juſt ſo ſtrong as not to coagulate the Blood in the Veſſels, or excoriate the mucous coat of the Stomach; tho all the cuticle came off the Mouth and Throat, it vomited them all briskly, yet the doſe was often repeated with Lemon Juyce and Water between times. The firſt, a Man had ſwallowed twenty Grains of Opium by a Miſtake; a Child half an Ounce of Laudanum; the third the doſe was uncertain; for none would confeſs it: All three are now alive and well. *Arſenic* produces alſo terrible Vomiting, Convulſions and Death; I have been concerned for two, who had each of them ſwallowed half an Ounce of it poudered, the inſtant they began to Vomit, they wanted much to get ſafely free from their late ſweet Morſels when called in, I ordered only large quantities of fat Breath, with Butter, to be drunk, and ſeveral Glyſters of it to be injected, both quickly recovered, and are now well. 6 *Pain of the Stomach*, from ſome irritating cauſe, as ſome ſharp, ſaline, or putrid matter, lodged in It's Valves, or nervous diſorder, or ſtoppage of ſome natural Evacuations, or from Hyppo or Hyſterics; In all which Chalybeate Waters, drunk at the Spring, with riding, will give great relief, as *Aſtrope*, *Benthal*, *Stockbond* &c. If it be the remains of a Gouty or Rheumatic humour, the uſe of *Bath* or *Buxton*, is preferable. ----- 7 *Wind* or *Flatulency* of the Stomach; with Belchings and Rifting; this is often the Effect of Hyppo or Hyſteric, or of hard and late ſtudy, want of Exerciſe *&c.* Here Chalybeates with Exerciſe are primarly indicated. If from eating flatulent or Viſcid Foods, or ſuch as are of a hard digeſtion, or from a Laxneſs of the Stomach, in all which ſtrong, Saline Sulphur Waters are of ſpecial ſervice. If from habitual coſtiveneſs, *Scarburg*, *Cheltenham*, and *Comner* are excellent; but if the coſtiveneſs be with a Relaxation of the Stomach, Purging Chalybeats are beſt. But from whatever of theſe cauſes it happens in Gouty People in the decline of Life, Bath Waters claim the preference. --------- 8 A hollowneſs or emptyneſs of the Stomach; this is ſeldom obſerved but in hyſteric and hyppo'd Perſons; after the uſe of Hyſterics with bitters and the bark, Chalybeates, and riding, compleat the cure, as *Cliff*, *Aſtrope* &c. ------- 9 A fullneſs or ſmall ſwelling at the Pit of the Stomach, this is chiefly an attendant of Indigeſtion, a Load of Flegm lodged there, or a pall'd, relax'd, ſtate of the Ventricle, therefore either Saline Sulphur Waters, or laxative ſtrong Chalybeates, with Exerciſe, moderately warm diet, and Abſtinence from Malt Liquors, are fitteſt. —— 10 *Coldneſs*, or *Aptneſs to catch* cold at the Stomach; the firſt is often the fate of hard Drinkers, eſpecially of Spirituous Liquors, and the laſt, the Effect of weak Nerves, cloſe Study, and Hyppo; to them we recommend briſk Chalybeate Waters, riding, cold Bath, and a thick warming Plaiſter to the part. To the firſt we adviſe *Bath* and *Buxton* Waters. 11 But the moſt frightfull and dangerous Diſtemper to which this Bowel

Bowels is lyable, is the *Morbus Cholera*, tho we preſcribe not Mineral Waters in the fit, yet we beg leave to ſay, they are the beſt Medicine in Nature out of it, and that either when the diſeaſe in a lower degree is become habitual, or has it's frequent returns. Tho this diſeaſe chiefly Reigns in Summer and Harveſt, eſpecially among theſe paſt youthhood, yet in ſundry ſubjects, it ariſes from various cauſes, but all ſuch as affect the Stomach, Gall, and Sweetbread, as exceſſive hot and dry, Sultry and inconſtant weather, drinking Stale dead or thick Malt Liquors, prick'd VVines, or cold VVater, when the Body is hot; Violent paſſions of the Mind, Grief, Fear, ſudden Anger and too much Fat, Greaſy, Acrid Meat, Bacon, Oils or Meat dreſt with too rich, hot, pungent Sauces, too much Fruit eaten in a Morning or on a full Stomach, drinking freely preſently after it; as Muſhrooms, Melons, Cucumbers, Peaches, Plums &c; or from ſtrong Purgatives; drunkenneſs, or eating Salads too freely, Onions, Greens, Leeks &c. Or, in a word, whatever may increaſe the ſecretion and diſcharge of Bile, and pancreatic Juyce, into the duodenum; and thence ſend it partly up into the Stomach, and partly down into the inteſtines; or whatever may produce in the Stomach, either a Relaxation of it's coats, or ſharp acrid, acid Humours to irritate it's Membranes. But whatever are the remote cauſes, the requiſites indicated are, thinning, ſoftening, ſweetening and expelling the Humours leſſening the glandular Secretion of thoſe Viſcera, and bracing them.; Therefore ſuch as have frequent Returns of this Diſtemper, or labour much and often under it in a lower degree, drinking Chalybeate Waters is highly neceſſary, with Exerciſe. If the Conſtitution is naturally, or at preſent accidentally, bilious, Briſtol, Matlock, & Buxton ſhould firſt be uſed as preparative for Chalybeates. Gouty perſons ſhould apply to Bath or Buxton. When the Stomach is very much pall'd and relaxed, Harrigate, or other ſaline, ſtrong Sulphur Waters ſhould have the preference. --- 12 *Hartburn*, which proceeds from acrid or acid Humours lodged in the Stomach, cauſing a ſlight Excoriation, and in general, is the Effect of Stale or Sour Liquors, or of ſuch things as may leave a ſharpneſs on the Stomach, either of themſelves or with the Addition of other Juyces, Pump'd up from the *Duodenum*; or it may ariſe from things peculiar to excite it in ſome Conſtitutions, as Eggs; Barley bread, Aniſeeds &c. Or in pregnant Women. But from whatever cauſe it comes, we certainly expect

Relief (except in the laſt caſe) either from Chalybeate or Calcarious Waters, as *Scarburg*, *Kirbythewer*, *Moretonſee* Pump &c. ——— 13 A *Conſtant*, *Troubleſome Heat*, leſs or more at the Mouth of the Stomach, is from a rancid, Oily, Acrimonious, or Bilious Humour, irritating the Coats; and ſo cauſing a ſlight Inflammation there, which is increaſed by Bitters, and warming Stomachics: But it's certainly cured by the tepid, Calcarious, or Chalybeate Waters, having much Earth or Ochre, with Nitre, as *Scarburg*, *Malton*, *Cliff*, *Tarleton*, *Buxton*, &c. Theſe diſſolve the Humours whilſt the Earth abſorbes the acrid Oyl or Salts, and carries them off. —— *Fetid Nidrous Belchings*, which taſte and ſmel of rotten Eggs or things burnt, the Mouth, Breath, and Feces ſmell intolerably fetid, at the ſame time, and Thirſt often attends it. This is from a putrid acrimonious humour, both in the Bowels and Blood, and threatens great danger if not ſpeedily cured. But as it proceeds from crambing the Stomach too greedily, with Animal Food, Oily, and Greaſy things, too great indulgence of ſuch things as eaſily and quickly putrify, here a moderate vegetable diet with acids is required, Beer, or Water drinking, are of Service alone; but purging Sulphur, or Steel Waters, root out the Diſeaſe, till a freſh cauſe is given, ------ 15 The *Hiccup*, this is often very troubleſome when It's not Symptomatic; being a Convulſive Motion of Gullet, Stomach, and Midriff, ariſing from whatever may irritate theſe parts, as hard drinking, too much eating, or feeding on dry things, without any potables, or drinking things too cold. In all theſe caſes the naturally tepid Waters anſwer to a wonder, next to them Limeſtone Water, which have a ſlight Volatile Sulphur; or Ochry Chalybeates. ------- *Thirſt* we do not here intend that which accompanies Fevers, or other acute diſeaſes, or drunkenneſs; and is only Symptomatic, but that which is habitual, in ſeemingly healthy temperate perſons, which ariſes from ſome Fault in the Solids or Fluids, as when the firſt are contracted, ſo as not to give way to ſuch a quantity of Fluids to paſs, as may afford due *Saliva*, both to moiſten the parts and *Malax* the Food; or when their excretory ducts are dried up and parch'd by exceſſive Heat, Salt Meats or ſpiritous Liquors. The Fault is in the Blood, when it abounds with a Salt alcaline, bilious or oily acrimony, or from it's Thickneſs or Viſcidity, which make it incapable of paſſing ſmall Veſſels, in a neceſſary and natural proportion, to anſwer the intentions of the *Saliva*. Or laſtly it may be cauſed

ſed by ſome great Evacuations, or emptyneſs of the Veſſels, from ſome preceeding diſeaſe, or ſome ſevere abſtinence. But when either the ſolids, or a vitiated ſtate of the Fluids are the cauſe; nothing comes up to a courſe of Drinking the naturally tepid Waters, which relax dilate and fill the Veſſels, correct the Acrimony, Viſcidity, and Thickneſs of the Juyces, open the Obſtructed Glands and their Excretory Ducts, and ſo make way for diſcharge of the *Saliva*; or in want of theſe; ſweet Calcarious, or Sulphur, and thin Chalybeates, and if the laſt be warmed without loſs of their Spirit, they would be ſo much better. The laſt caſe requires no Waters. -------- From diſeaſes of the Gullet and Stomach, proceed we to ſome of theſe of the Inteſtines.

Twentieth. *Coſtiveneſs Habitual*, whether it be from making too free with rough Wines, a reſtringent Diet, hard labour, great Exerciſe, retaining the Excrements too long, eating dry Victuals, without due quantity of drinkables to dilute; want of Acrimony in the *Feces* themſelves, to irritate the inteſtines to Expulſion, or the inſides of the Gutts being loaded with a tough Mucus &c. Whether from theſe cauſes mentioned, or others, few chronic Diſeaſes exceed this in danger, ſince it often proves the way to Cholics, Iliac paſſions, and Hernias, we once knew it produce a total and mortal Coalition of the upper part of the Colon: another time we knew it breed a large Excreſcence, which fill'd the Colons tranſverſe Diameter, ſo as neither the leaſt *Feces*, or even *Flatus* could paſs; in which wretched condition both patients languiſh'd many days, and died. In this diſeaſe, no Medicines are comparable to a long courſe of Nitrous Waters drunk tepid eſpecially going to Bed, as *Scarburg*, *Cheltenham*, *Comner*, *Cliff*, *Thoroton*, *Moretonſee* Pump. But neither in habitual Coſtiveneſs, nor Thirſt, are the Saline Sulphur Waters proper; for containing moſtly Sea Salt, they heat and dry too much. As a conſequence of this diſorder, comes often. -------- 2 The *Colick*, which ariſes either from a great diſtention, ſtrong Irritation, or violent Contraction of the Bowels, and whatever produces any of thoſe, if not prevented may alſo bring on a Colick. As a diſtention of the Bowels with wind pent up in them, which moves from place to place, and carries it's pains with it, or a diſtention of ſome Gutt, with indurated *Feces*, or preternatural hard Bodies gathered and ſtopt there, as Grape ſtones Cherry Stones, Plum Stones &c. Or a diſtention with Flegm gathered

thered and retained there, in which laſt caſes, both the pain & cauſe of it keep conſtantly fixt in the ſame place. The Bulk or altering the Situation of a large Stone in the Kidneys, may occaſion the Symptoms of a Violent Colic, but then the pain keeps fixt to it's place, and a total or partial Suppreſſion of urine attends it An Irritation of the Bowels may ariſe from any acid or acrimonious Humours twitching them; they may alſo be convulſed, compreſs'd and as it were ſqueezed; hence moſt Colic ariſe from diſtention, irritation, or convulſion, and are well divided into Flatulent, Flegmatic, Bilious, Nervous or Convulſive, call'd dry Gripes, Hiſteric and Nephritic; and of theſe the Bilious, dry Gripes, and Nephritic are moſt dangerous, often ending in the Iliac paſſion, Palſy, or Epilepſy; tho all of them are dangerous when they are become habitual, and the Patient has ſuffered ſeveral Relapſes. The Bilious Colic is attended with Vomiting of Green or Yellow matter, often very bitter; Heat at firſt, Thirſt, the Belly not ſo bound at firſt as afterwards; nor the pain ſo fixt and certain, but more wandering in the beginning, and ſtill encreaſes after eating. Here either the Sulphureous tepid, or Chalybeate Waters generally take place (provided they abound not with Marine Salt, which may heat, dry. and render the Body more coſtive after) eſpecially if they keep the Body open, and cool, and cleanſe the Bilious Strainers of the Liver, as *Scarburg*, *Malton*, *Cheltenham*, *Comner*, *Kirby thewer Cliff*, *Tarleton*, &c. The Nephritic Colic is diſcovered from the pain being fixt in the Region of the Kidneys, reaching from thence along the Ureters to the Teſticles, Vomiting in this gives not a Moments Relief, nor does eating encreaſe, but rather abate the pain, here the Urine is firſt clear and thin, then White, laſtly thick, ſubſides and brings Gravel or ſmall ſtones, along with it. In youth where there are no large ſtones in the Kidneys, the light Chalybeate Waters drunk at the Spring dayly, are of Great Service, and ſeldom fail to cure; but paſt the Meridian of Life, when the diſtemper is complicated with, or follows the Gout, Bath Waters are, without all peradventure, the beſt, and in every Stage of Life, all ſuch Waters as contain much Earth. are to be avoided; for we have often known ſuch produce a fit of the Stone in perſons who were utter ſtrangers to it both before, and after. Hyſteric Colicks are known from their Encreaſe or Return on any ſudden and ſtrong commotions of the Mind, they have often a Motion like a Ball moving from the Bely to the Throat, ready to choak them, with a greater Sinking of Spirits than commonly attends Colicks, ſometime the Belly is pulled to the Back, other times diſtended like a Drum, here Chalybeate, gently laxative Waters, eſpecially if there is a ſenſible Mixture of Sulphur with them, chearfull company and Equanimity, with dayly riding, are indicated. The Nervous Colick or dry Gripes ordinarily begin in one point of the Belly, and ſpread over the whole from the Stomach to the *Anus*, and contract or convulſe it to that point, with inexpreſſible torment, burning, piercing, pricking pains, the Belly coſtive, the urine little, cold ſweats, the extream parts cold, great Anxieties about the Heart often faintings &c. There, only naturally hot, or tepid Waters; uſed externally and internally, can be of much Service, as *Bath*, *Buxton*, &c. Next to them, after the fit is off, the abſorbent, alcaline, earthy Waters, drunk warm, as *Scarburg*, *Kirbythewer*, *Cliff*, *Sutton Bog*, *Tarleton*, *Comner* &c. In a flatulent Colic, the pain moves from one place of the Belly to another, often with a Grumbling Noiſe, and is eaſed by expelling wind. As this diſeaſe ariſes chiefly from flatulent Foods, a diminiſhed perſpiration, or a Relaxation of the inteſtines, is become habitual (for we adviſe not the uſe of Mineral Waters during the paroxyſm of any Colick) the ſtrongeſt, Laxative Chalybeate Waters, and dayly riding, are beſt. In a Colick from Flegm or Worms the Saline Sulphur Waters are incomparable. If the Diſeaſe is from indurated *Feces*, or *habitual Coſtiveneſs*, *Cheltenham* and *Scarburg* Waters drunk warm in Bed, are beſt of all. If it's from things ſwallowed, which lye in the Body, and gather indurated *Feces* about them like hard Spongy Bodies, as Fruit Stones, or the like, then take ſome Oleaginous Mixture at Night, and a laxative Oily draught in the Morning, and drink tepid Waters after, as *Buxton* or *Matlock*, in the Forenoon, Afternoon, and with Meals. But in all habitual Colicks, even hereditary or Co-natural of any kind. *Moffat* VVell chalenges the preference of all VVaters or Medicines in this Iſle, for it rarely ever fails to cure.

21. A *Looſeneſs* ariſes from a Stimulation, Relaxation, or Load thrown upon the inteſtines. The Stools are large and frequent, black, green, yellow, brown, watery, frothy, thin, mucous, fat, with, or without Gripes, from cold or ſtoppage of perſpiration, ſome bad Liquors drunk, or diſagreeable, unacuſtomary Food eat, long Rains,

with a moiſt watery Air, Fever, Sorrow, Anger; much fruit eaten &c. If from an Irritation or Stimulation, Gripes, Heat, Thirſt, a ſlight Fever or inflammatory Diſpoſition, yellow or greeniſh Stools mixt or ſtreakt with Blood attend. In a Relaxation, the Stools are very thin, watery, large, painful, flegmmy, or mucous; If from the atrabilis they are black or blackiſh; If the Diſtemper prove tedious from whatever cauſe, it weakens and excoriates the Bowels, and exhauſts the Juyces out of the Veſſels and Body; hence weakneſs, laxneſs, leanneſs &c. In the firſt caſe, we recommend the tepid Waters with alcaline Earth, the firſt to dilute, and waſh down the Salts, the 2d to ſweeten the Glandular Juyce of the Bowels, or in want of them, the cold Waters that contain a pretty large ſhare of that Earth, as *Mortonſee* Pump or *Kirkbythewer*, or the petrefying Waters. In the 2d and 3d, ſuch Chalybeates as contain much ferruginous Earth and Ochre, being ſweettening, diluting, reſtringent, drying and warming, but have little purging Salts. But *Holt* Water at once anſwers all the various deſigns of this chronic diſorder, better than all the other Waters beſides, as it cools, thins, purges, dryes, ſtrengthens wonderfully, and braces. If a want of Appetite and Digeſtion with a faintneſs, accompany the Looſeneſs. and whatever is taken into the Body, is diſcharged by Stool, none or very little altered it's a *Lienteria*. But if both Appetite and Digeſtion be good, and yet pure chyle voided together with the Excrements, it's a *Cœliaca*; here gentle Acromatics and Bitters come in play, with a Glaſs of ochry ferruginous Waters and red Wine, or *Holt* Water is all.

22. A *Dyſentery* or *Bloody-flux*, with Bloody Stools and great pain of the Bowels from Excoriation, Inflammation, or Exulceration of the inteſtines. If this Diſtemper has been very chronic, and the Sick brought very low, there is no doing with Waters, till by *Liquid Laudanum* judiciouſly given, the Hurricane has been appeaſed; but in other Caſes, *Holt* Water is equal to all, for it clears off the Humours, cools the Blood, gently braces the inteſtines and glandular Coats, but where they cannot be had, Chalybeates with much Ochre, and Volatile Steel, drunk warm as directed, are good, or the petrifying Waters with little Salt, whoſe Earth ſweetens and abſorbes the Salts till they are carried off, and give the Bowels time to recover their Tone or the ſame purpoſe the tepid Waters have been found ſervicable. but in both looſeneſs and Bloody flux, Exerciſe muſt be avoided, and reſt procured or indulged except from a meer relaxation.

23. *Worms*, we imagine to be produced from Eggs of Inſects ſwallowed with our Meat and Drink, and lodged in the lax Stomachs and Bowels of Children chiefly, and lying in the viſcidities there, breed and depoſite *ova*, which are hatch'd, and ſo this Spawn is encreaſed inwardly and outwardly. Children are more lyable to them than grown up Perſons, from the Laxneſs of their inteſtines, irregular Diet, want of Exerciſe, and love of Fruits. The ſigns of Worms reckoned up by Authors are too many for us at preſent to ennumerate; but the chief ſorts are. 1 *Aſcarides* or thin ſmall Worms which lie chiefly in the *Anus* or lower part of the *Colon*, and breed a freſh young fray dayly; an intolerable itching in the *Anus*, a frequent deſire of going to Stool attend them. 2 The *broad Worms* are ſeveral feet or yards long, divided all the length with croſs joynts or knots, they are attended with a voracious appetite, which if not gratified, it's followed by a gnawing pain of the Belly; and with the *Feces* are ſubſtances like Cucumber ſeeds diſcharged, theſe Worms lie every where, or any where in the Belly, tho the round Worms lie chiefly in the Stomach; The other common ſigns, are, a Stinking Breath, a full and hard Belly, pain of the Stomach or Gutts, feveriſh fits, with an intermitting pulſe, and glowing Cheeks, Thirſt, a dry cough, heavy and aching Head; Vomiting, Sleepyneſs, Itching of the Noſe, Dilirium, Convulſions, Atrophy, Faintings, Cold ſweats, Hiccup, Epilepſy, Madneſs, Blindneſs, Fever, Conſumption. So many various, and uncommon are the Symptoms of Worms, that they have been taken for Divelry, Witchcraft, and what not; But for cure, we know of no Medicines nor Waters come up to the uſe of *Harrigate* Sulphur Waters, then *Keddleſton*, *Moffat* Well, but chiefly *Maudſley*, to ſuch as can drink it, then the Nitrous purging Waters, as *Scarburg*, *Cheltenham*, *Comner* &c. Theſe Sulphur ſaline Waters will not fail to cure, if the inteſtines are not gnawn or eaten throw by that Vermine, which there is reaſon to fear, whilſt Convulſions, Epilepſies, cold Sweats, Faintings & Madneſs come not on. But *Holt* Water exceeds all by ſtrengthening powerfully the Bowels.

24 A *Jandice*, either from encreaſed quantity of Bile in the Body, or ſome hindrance put to It's Secretion in the Liver, or from ſome ſtoppege preventing it's influx out of the *Biliary Ducts*, into the *Duodenum*, there to be mixt with the Food; which Obſtruction

may be ſometimes irremovable, as when it's from Chalky matter, Stones, *Schirrus Callus* &c. But in curable caſes, if of long ſtanding, and the Patient yet able to go through with it, a courſe of Harrigate Sulphur Water is of the greateſt Service. In common caſes all Chalybeate Waters, eſpecially theſe beſt impregnated with volatile Steel, and Iron Earth, have the preheminence. When the Diſeaſe happens to hard Drinkers of a thin habit of Body, *Buxton* muſt be preferred. If in old weak or worn out People, the uſe of *Bath Waters* will be of great Service. VVhen the Diſeaſe comes from the ſuppreſſion of any Natural Evacuations, Laxative, Strong Chalybeates are indicated.

25. A *Dropſy*, where obſerve. 1. We comprehend all unwieldy fullneſs of both the *Lymphatics* and *Cellullæ Adipoſæ*. 2. That we neither intend, nor recommend the uſe of Mineral Waters, when the Lymphatics are broke and pour out their contents into the cavities or inteſtices of the neighbouring parts. ------ And 1. Too great a fullneſs of the fat containing Veſſels; when the Blood is very ſoft and ſmooth, full of Oyl, which ſupples the Veſſels, is ſtrained off from the Blood and hoarded up in it's Calls, in too great quantity, to the impairing the natural ſtrength, rendering the Body bulky, inactive, leſs healthy and ſhorter lived, the Diſeaſe is viſible, and moſtly from Idleneſs, want of Exerciſe, a free uſe of Malt Liquors and Animal Food. The cure lies in refraining Ale, Idleneſs, too long, but eſpecially Day Sleeps; a moderate uſe of Animal Food, and that only once a Day at moſt, Dayly Exerciſe, cold Bathing, uſing acids to Diet, and drinking two or three Mornings a Week, ſtimulant purging Mineral Waters, as *Cheltenham*, *Harrigate* &c. Then finiſh with bracing laxative Chalybeates. ----- 2. A *Leuco-phlegmacia*, *Anaſarca*, and *Apoſarca*, wherein the *Lymph* either widens and ſtretches it Veſſels, or ſtagnates over the whole Habit of the Body; beginning with a pale Urine, proſtrated Appetite, ſwellings, firſt in the Feet and Legs at Night, then riſes higher to the Belly, Thighs, Breaſt, Shoulders, Back and Arms. Then the Urine is ſcanty, thin, crude and white, and becauſe the Veſſels are very much on the ſtretch, and the *Serum* either ſtagnant, or moves very ſlowly, becomes viſcid, perſpiration is leſſened, & It's from things viſcid; the Veſſels of the Lungs are alſo loaded; and the pectoral Muſcles being relaxed, Breathing becomes more difficult. And from the Bloods

not being attenuated in the Lungs, nor undergoing due Attrition, by muſcular Action; Circulation is performed more difficultly; hence Thirſt, and a ſlow Fever. In this ſtate of the Diſeaſe, the Lymphytics being not yet broken, nor having diſcharged their Liquors into any Cavities, Interſtices or Membranes. If the Diſtemper is from a long moiſt or cold Air; Obſtruction of Perſpiration, a chronic quartan Ague, feeding on windy Viſcid Foods, or neglect of Exerciſe, here the tepid Waters muſt not be cruſted, they rarely ſucceeding well, but the ſtimulant ſaline ſulphurous Springs may be depended on, being drunk dayly, and bathed in warm twice a week, ſweating in Bed after, for the whole cure depends on reſtoring the Evacuations of Urine and Perſpiration, without which all methods will be without ſucceſs, for no ſooner are the Waters purged and ſweated off, but they breed again; therefore to ſet and keep open the Glands of the Skin and Kidneys, dilute the Viſcid Serum, mix, attenuate, and ſet it in motion, to bring it into the circulating Maſs, throw it upon theſe two outlets to be ſtrained off and diſcharged, to keep the Body open, the Bowels and Meſenteric Veſſels clean, to ſtimulate the widened, Stretch'd & ſluggiſh Veſſels, to ſcoure the Glands, and they reduce the unwieldy habit; we recommend *Harrigate*, *Maudſley* and the other ſulphureous Mineral Springs, then *Cheltenham* whoſe Salt is not only purgative, but peculiarly diuretic, which will do wonders. And at the ſame time, gently to brace the Veſſels, invigorate the Circulation, and encreaſe the Urine, a little of the briſk Chalybeates may be drunk in the Afternoon, after the Sulphur Water; together with pretty conſtant, but not violent Exerciſe. When the diſeaſe is from a Bloody flux, *Holt*; when from Obſtenate Obſtructions of the Liver, Spleen Sweetbread, *Myſentry* Kidneys, Inteſtines, or *Uterus*, Strong Laxative Chalybeates, a *Lienteria* or Cæliac paſſion, exceſſive *Menſes*, Hyppo, great and long Grief, Sorrow &c. The laxative, bracing, invigorating Chalybeates are to be reſorted to. As *Malton*, *Orſton*, *Thoroton*, *Cliff*, *Scarburg Chalybeate* &c. If it's from the Gout, Natural weakneſs, Old age, *Bath Waters* drunk naturally warm are beſt; If it take it's riſe from a ſlow Conſumption or Hectic, *Briſtol* and *Matlock* take place, provided that ſome thin briſk Chalybeate be drunk between times. If from drinking ſharp, ſtrong fermented Liquors dramming, whetting, or immoderate Punch drinking. *Buxton*, *Aſtrope*, *Fulwood* Spaw &c. ——— 3 An *Emphyſema*, is another kind of Dropſy, which ſeems to be a Retention of the groſſer perſpirable matter, turn'd to a flatulent and viſcid Fullneſs, ſtuffing, and diſtending rhe Lymphatics, over the whole Habit. As this is the ſizy remains of perſpirable matter, it's moſt eaſily, and ſafely carried off by the Skin in ſweating, for which end bathing in *Harrigate* Sulphur Water warmed, or *Bath* Water, and ſweating well after in Bed, and drinking Spiritous Chalybeate Waters, with moderate Exerciſe, ſeem moſt ſucceſsfull, at the ſame time keeping the Body open, by drinking *Cheltenham* Warm; ride dayly in a dry, free, open Air, after which a courſe of cold Bathing will brace up the Body. We have ſeen ſeveral in this Diſtemper, the ſwelling ſhifts from place to place in a few Hours, without heavyneſs, or leaving any impreſſion, when preſſed by the Finger. If attended with a fever it's dangerous. Where the Water in a Dropſy is extravaſated, as in a *Hydrocephale*, *Empyema*, *Aſcites*, *Hydrocele*, no Waters can be of uſe, only the ingenious Surgeons Knife. But if they lye immediately under the Skin, warm Bathing, and ſweating well after, will be of Service. Now to the Spleen.

26. Near allied to Article 8 preceeding, are the *Hyppo* and *Hyſteric*, whether they ariſe from intenſe depreſſing paſſions of the Mind, an Idle, Sedentary and Studious Life; Diminution, Obſtruction or Encreaſe of ſome natural or uſual Diſcharges; the too ſtrong Gratification of, or abſtinence from ſenſual pleaſures, high living, Intemperance Luxury, Groſs, Viſcid and coarſe Aliments &c. Yet theſe diſorders are ſaid to ariſe from a bad digeſtion, producing Viſcid Chyle, and Sizyneſs or thickneſs of the Blood, which generate Obſtructions, and chiefly affect the nervous Juyce. Tho upon taking away ſome Blood, we ſeldom or never ſee it Sizy, except from ſome Accidental cauſe, as cold: On the contrary, we often find them too much upon the Elaſtic; as well as ſometimes relaxed; hence they can often do with leſs ſleep and a coarſe diet; and for the Blood we moſtly find it thicker, blacker and leſs moveable. Therefore we have more reaſon to Suppoſe, that the diſeaſe is from a diſſipation of the ſmaller, and more moveable parts of the Blood, with a retention of the groſſer, whereby the Maſs becomes thicker, blacker and more Earthy, and ſometimes Saltiſh; which, from this condition of the Fluids; the Laws of Circulation, and Motion of the Animal Fluids, muſt fall upon the abodominal

Viſcera, chiefly the Spleen, Liver, Sweetbread and Stomach, cauſing there a Fullneſs, weight and uneaſineſs: Eſpecially after eating, breathing becomes more laborious, from that Load upon the abdominal Viſcera; hence the Secretion, Mixture, and uſes of all theſe glandular Juyces, are depraved and hindered, the firſt Digeſtions vitiated, and the chyle rendered leſs fit for it's purpoſes; and the longer the Diſtention of the Veſſels continues, the more obſtinate the Diſeaſe, and the Patient in greater danger. For if the matter is long pent up, and the obſtructions great, it will certainly become ſharp, gnaw and corrupt the Veſſels; or communicate it's Taint to the Brain and Nerves; hence Frenzy, Madneſs &c. Or to ſome other parts of the Body, and derive it's Name from the place where it fixes. From hence it's plain that this Diſeaſe muſt neither be attacqued by ſtrong purging, which expells the more wholeſome and movable Humours, but leaves the more thick, tough and earthy behind; nor by Sudorifics and Diuretics, which carry off the watery, and ſome ſaline parts of the Blood, ſtill leaving the groſs and earthy; nor by hot pungent Bitters, eſpecially infuſed in ſtrong Liquors, for the *Menſtruum*, according to it's quantity, thickens the Blood, eſpecially as it goes directly into the Stomach, and communicates it warmth, immediately to the parts affected, whilſt the ingredients ſtimulate, and brace np the Veſſels, and encreaſe perſpiration, or the waſte of ſtill more minute parts of the Blood. Nor is great ſtreſs to be laid on volatile Spirits, and Salts of vegetables, leaſt they encreaſe the alcaline Acrimony of the Blood, and forward the Expence of It's ſubtiler parts. Nor do we ſee how Animal Food ſhould be forbid, and theſe allowed, for as the firſt promotes a putrid Alcali in this Diſeaſe, ſo the laſt may be ſuſpected of increaſing an alcaline Acrimony, or Salts of that kind in the Body. Nor is the uſe of Snakeroot, Contrayerva, Saffron, Salt of Amber &c. The moſt likely to do ſervice, for they encreaſe the acknowledged cauſes of the Diſtemper; whoſe Cure ſeems to lye in making the thick part of the Blood movable, bringing back it's Lentor from the Sides, to the middle of the Veſſels, to undergo Circulation, Secretion, and Evacuation; the thick earthy parts muſt be ſeperated, not ſuffered to ſtagnate, diſtend and load the Veſſels, which are to be gently irritated, rouzed, ſet on and kept in a more briſk uniform Action, and a little braced. The Humours when thinned, attenuated reſolved, made to move and mix with the reſt of the Circulating Maſs. Are to be eaſily, (not violently) carried off; to this end, the Body muſt be kept ſoluble, the Skin thin, the Kidneys patent: The ſaline accrimonious parts of the Blood, with it's rancid Oyl; are to be ſweetened, obſorbed and carried off; all the Veſſels of the Abdomen are thus to be cleared, unloaded and cleanſed, the right and healthy Digeſtions to be reſtored; good chyle is to be carried into the Body, without receiving any Taint in the paſſages; a good laudable nervous Juyce to be obtained, to anſwer which purpoſes, we ſuppoſe Mineral Waters, to have unſpeakably the Advantage of Medecine; and ſo much do the moſt intereſted and prejudiced Phyſicians own; for when their Patients are either near worn out, or have reſolved againſt more Medecines, they are generally pack'd off to ſome Mineral Waters, thus they leave off, where they ſhould have begun. Now as diluting is indicated in this Diſeaſe, there is ſure no greater, ſurer and better diluter than Water; Water impregnated with the moſt Minute inviſible intractable Spiritous Volatile parts, which mixing with the thick, viſcid, earthy, ſlow moving Blood, will certainly mix It's ſubtle particles with theſe groſs and courſe ones, attenuate, and gradually make it moveable. Water impregnated with Salts, the moſt ponderous and ſolid of Bodies, which in the Action between Solids and Fluids, but eſpecially between the parts of the Blood it's ſelf, cannot fail acting with greater power and force, to thin, ſeparate, diſſolve, and render moveable, the groſſeſt, earthyeſt, tougheſt and moſt concreſcible parts of the Blood, provided the Veſſels are not ſo far worn out and weakned, that they cannot anſwer their part Salt, or principle which miſſes not the Solids, bnt irritates, rouzes and invigorates them, encreaſes and preſerves their Spring and Vigour, that they act with more Force, Continuance and uniformity. And yet this Salt (being Nitre) neither heats nor dries the Body, nor ſhrivels up the Veſſels like Marine Salt, but cools and cleanſes. This Salt acts upon the Inteſtines, Kidneys and Skin, keeps the Belly and Urinary paſſages open, and clear, for the diſcharge of Earth, Salts and Sulphur from the Blood, together with the ſuperfluous Watery parts. And theſe Waters being Nitrous Chalybeates (for ſuch we here mean) carry alſo a diſſolved Steel or Iron into the Body, than which we have not a more powerful, ſafe bracer of the Solids here, and Attenuater of the Fluids; where there is no Fever, nothing can better encreaſe the Blood, due Mixture, Motion and Momentum, keeps up an equal Fluidity, and prepare it for Secretions to be made from it.

The alcaline Earth at the ſame time is a good abſorbent of Acrimony, or putrid Alcali and yet neither Salt, Earth, or Steel, encourage or encreaſe any reigning Acrimony, or putrefaction in the Blood. But that the uſe of theſe Waters may be more Effectual, it muſt be attended with the other neceſſary Aids of Exerciſe, cold bathing, Temperance, ſeaſonable Hours of eating, drinking, going to Bed & riſing, a choice of proper Meats and Drinks, in due quantity with cheerful Company, avoiding the depreſſing paſſions, ſhaking off or changing the predominant gloomy Idea. But here muſt be allowed time, patience, perſeverance till the deſired end be obtained. The Waters in this caſe are *Scarburg Chalybeate*, *Cliff*, *Aſtrope*, *Malton*, *Hartlepool*, *Brockhole*, *Knowſley*, *Binley*, *Stockbond*, *Benthall*, *Tuewhet Spaw*, *Fullwood*, *Ilmington*, *Dinniugton* &c.

27 *Stone* and *Gravel*, ſcarce a more violent and painful Diſtemper can attack Mankind, tho it's cauſe ſeems to be no more than a collection and accumulation of earth particles or matter in the pelvis of the Kidneys at firſt, whether from a Relaxation of the parts, whereby the more thin and Watery portion of the Urine, drills off into the Head of the Ureters, whilſt the more groſs and Earthy are driven on, till it form an indiſſolvable Body, about which there gathers a Cruſt, more or leſs, Stoney, Hard and Solid, and over theſe, ſeveral other Rows or Laminæ, of a Red, Blue, White &c. Colour: Or from a ſtraitneſs of the Urinary Strainers, which filter off the thinner, and retain the thicker, and more Earthy parts. But from whichſoever it be, ſeveral things give riſe to this diſeaſe; as a too liberal and cuſtomary uſe of Earthy and tartarous Wines; diminiſh'd perſpiration, by a moiſt or cold Air, whereby the more groſs, heavy, and earthy particles of the Blood, are caſt upon and detained at the ends of the renal Arteries, where the firſt beginning of the Stone ordinarily happens. Waters loaded with much Earth may occaſion this diſeaſe, in Bodies diſpoſed to generate Stones, or even in ſound Bodies. It may ariſe from a long and liberal uſe of the teſtaceous Pouders, or from Gouty or Aſthmatic Humours, being thrown upon or lodged in the Kidneys. But from whatever mediate cauſes it comes, whither hereditary or acquired; before we begin the uſe of Mineral VVaters, we muſt know, the Seat, Solidity, and Bulk of the Stone, the Age and Conſtitution of the Patient; for a confirm'd, large, hard Stone in the Kidneys, is not

to be meddled with or diſlodged. That there is ſuch a one there, few know from a heavy, dull pain in the place, from making of Bloody Urine after any ſudden and Violent ſhock, ſtrain or Motion of the Body: or from Hair, Strings, or Skins of purulent matter mixt with the Urine. If it's in the Ureter, there is a ſtoppage of VVater, an Inflammation of the part, with a ſmall Fever and racking pain. If in the Bladder, there is intolerable pain, before, during, and after making of VVarer, which is voided by Drops, is VVhitiſh, and let's fall a large, thick, heavy Mucous ſediment, there is a troubleſome Titulation or Itching at the end of the Glans, with a deſire to go to Stool when they make VVater. But whether the Stone be in Kidneys or Bladder, if very large and hard, it's neither to be diſſolved, nor expell'd by Mineral Waters, (but only by Mrs. *Stevens* Medicines) which are only uſeful in other Caſes, according to different Conſtitutions. For in old Age, or where the Stone ſucceeds the Gout, or when they have their alternate paroxiſms, or finally where the Kidneys relieve the extream parts from their Agonies and Cencretions, the Blood is to be warmed, the Solids to be invigorated, the calculous matter in the Animal Juyces, to have it's Coheſions and Attractions leſſened, ſeparated, and the earthy parts carried off; the *Uropeia* cleanſed, the courſe of the Urine from the ends of the emulgent Arteries into the Ureters to be haſtened, without ſtaying long in the Bladder, to have it's principles ſeparated, & let fall its earthy parts. Which intentions are beſt anſwered by *Bath*, and *Buxton* Waters chiefly, drunk on the place, and continued, as the Caſe, Conſtitution, and heat of the Waters allow. In young people, who have the Diſeaſe hereditary; we ſtill ſay that Temperance, regular, ſeaſonable, Hours, light Suppers, raw Whey drunk in Winter, and light Chalybeate Waters dayly in Summer, with a draught of it drunk warm every Night going to Bed, refraining rough, tartarous auſtere Wines, and ſuch as promote the breeding of a Stone, will go a great way, if not totally Exempt from both Gout and Gravel. Such as have contracted a fit from ſwallowing Quantities of earthy Medicines, or Mineral Waters loaded with Earth, need only to deſiſt the uſe of theſe, and take to drinking light thin Chalybeate Waters for a Month or ſix Weeks, this will carry off that unnatural inactive Earth, out of the Blood, and reſtore It's healthy Mixture, keeping the Body ſoluble at the ſame time. Frequent generating of Mucous matter, Sand, ſmall Stones, Gravel &c. Whether from Intemperance, Cold and

Wet, or other outward Accidents, are effectually cured by drinking light Chalybeate Water, having ſome laxative nitrous Salt, and a little alcaline Earth, if they are regularly uſed for a due time. But during an obſtruction of Urine, from any ſtoppage in the Ureters or Neck of the Bladder, Waters muſt not be drunk, eſpecially in any quantity, leſt the Experiment be dangerous, and the Effect fatal. But where there is only a partial, not total obſtruction, Chalybeates have done wonders. *Aſtrope* brought away from Mr. *Adam Billinger* of *Woodſtock* eleven Stones in one Night, when all other means failed. *Malvarn* Waters made *Will. Clifford* paſs a Stone 3-4ths of an Inch long: And not one noted Chalybeate do we come at where we meet not with great Numbers of cures of this Sort. We have known repelling the Blood in the Piles, give a ſudden and violent fit of the Stone. Such as have their Urine ſtopt by it, ſhould firſt have the Belly looſened, then ſit up to the Pit of the Stomach in a tepid Bath, while they drink a Pint or two of theſe Waters.

28. A *Diabetes*, is the reverſe of the laſt, here, either the watery part of the Blood is too copious, too much attenuated, or the ſecretions of the Skin too much diminiſhed, or the Glands of the Kidneys overſtretched, cauſing a frequent and immoderate diſcharge by urine, to the waſhing of the Body inſenſibly, therefore called a *Diabetes*. Now, ſuppoſing this to be the caſe, we find Medicine of very little Service, even to the gaining of a Truce. The Waters now of greateſt Note in this caſe are *Briſtol* and *Matlock*, both which contain a Chalybeate Principle; Next to them ſeem ſuch as contain the moſt Crocus of Iron, as *Malton*, *Orſton*, *Thoroton*, *Cliff*, &c. But what exceeds all, is *Holt*, which Purges, Stimulates, and Aſtringes, at once powerfully, and will do more in a Month than all the others will do in a Year.

29. In a *Partial Surpreſſion of Urine*, from a *Palſy*, or *Convulſion* of the *Sphincter* of the Bladder, drinking Bath Waters, is of all others the beſt. But when the Diſtemper is from a large Stone, Swelling, Excreſcences, Inflammations, the *Fætus*, or *Feces*, we know of no Mineral Waters that can be of ſervice. Or if it's from the *Serum* not being ſeparated from the Blood by the Kidneys, where the *Vertebræ* of the Back are not hurt, the tepid Waters drunk very

ſparingly at firſt, and bathed in, will certainly be of ſervice, both as they relax the Solids, aud throw the thinned Blood on the Kidneys, which will be hereby diſpoſed for their Office. Or in want of theſe, the light Chalybeate Waters warmed as directed; the Body at the ſame time, being put in a tepid Bath of common Water.

30. When *making of Water* is attended with *Difficulty, Heat, and Scalding*, without any Veneral Diſeaſe, Wound or Ulcer of the Bladder; but chiefly from an Abraſion of the Mucous Coat, and the Acrimony of the Urine and Humours; all the Limeſtone, but chiefly the tepid Waters, may be depended on for a certain Cure. Nor are the Chalybeates which contain much Ochre, nor theſe which have much alcaline Earth, uſeleſs.

31. In Ulcers of the Kidneys and Bladder, not Veneral, either the tepid Waters, or the Chalybeates well impregnated with volatile Steel and Ochre, or Limeſtone, have done wonderful Cures. Medicine could neither promiſe nor perform; ſuch for they are ſweetening, drying, healing, cleanſing and bracing. But *Holt* alone can be depended on for a quick and eaſy Cure.

22 Let us now conſider the Uſe and Efficacy of Mineral Waters in the *Diminution*, *Defect*, *Irregularities* and *Vitiations* of the *Catamenia*. When they are obſtructed from Emaciation of the Body, by ſome long Illneſs, Faſting, Watching, or other Evacuations in too large quantities; or from a coalition of the parts from ſome unnatural Tumors or Excreſcences in the Vagina or Uterus; to expect Relief from Mineral VVaters, were ridiculous. The firſt being only curable by a Nouriſhing diet, Reſt of Body and Mind, which may reſtore the Body to it's former healthy State. The next by putting a Stop to theſe immoderate outlets, the laſt by the Hand of an able Surgeon. Secondly, the diſeaſe may be owing to too great a narrowneſs, ſtrength, or ſtiffneſs of the Veſſels, whereby they reſiſt the Blood, and prevent it's accumulation in the Uterine and Vaginal Tube. 3 It may alſo come from too great Thickneſs, or Viſcidity of the Blood; or from any ſudden conſtriction of the Veſſels when beginning, or about to flow; or by a derivation of that Blood to other parts. 4 Or to a too liberal and indiſcreet uſe of reſtringent Medicines: Or to the

uſe of Earthy, Viſcid, Aſtringent foods; or to putrid Ulcers in the parts, converting that Blood into purulent matter. The ſecond caſe attended with too great a Turgeſcence of Blood, will occaſion Violent pains in the Back. Hipps &c. And a bearing down, or Piles, and a *Stillicidium* of the *Menſes* in ſome. A too great Dilatability or inflexibility of theſe Veſſels, with ſcantineſs or plenitude, Viſcidity, Tenuity or Acrimony of the Blood, vary the periods in many, ſome having them more frequent, others ſeldomer. But a laxneſs of the Veſſels, or a thinneſs of their Coats, or too great an *Impetus* of the Blood to that part, or too rich Diet, an Acrimony or thinneſs of the Blood; Meats or Drinks of a provoking nature; too great plenty of good Blood in the Body *&c.* Are all apt to produce too great a Flux; which tho moderate at firſt, becomes often, obſtinate dangerous. or fatal. But when the Lacunar Glands, or Female *Paraſtatæ*, with the other Glands of the internal *Pudenda* are relaxed, and have their Tone diminiſh'd or loſt, they diſcharge firſt a clear Viſcid, Lymph or *Serum*, which, in time, acquires ſome degree of Acrimony, changes both it's Colour and Nature, becomes White and Sharp, and Conſtitutes a *Fluoralbus*, which, however ceaſes, during the Menſtrual diſcharge of arterial Blood from the Uterine and Vaginal Veſſels, then returns when the other is over; except there be ſome Veneral Virulency or Malignity in the caſe; then both flow at the ſame time. Or if an Inflammation of the *Uterus* has preceeded, ending in an inveterate diſcharge of fetid purulent matter, leaves a dangerous Ulcer. or if ſome part of the *Catameniæ* lies coagulated in the Cavity of the *Uterus*, cauſing terrible Symptoms. In all theſe female diſorders which are the riſe of ſo many and various Diſeaſes in that Sex, eſpecially where the Diſtempers are become Chronic, nothing can poſſibly come up to the ſucceſs of Mineral Waters, eſpecially of the Chalybeate Tribe; for the Water thins the thick or Sizy Blood, encreaſes it's quantity, fills the Veſſels whilſt the Steel and Salts ſtimulate and invigorate them; they encreaſe both the Bloods Motion and Momentum, hence the parts of the Blood not only act with greater Force againſt one another, but alſo againſt the Veſſels, which return a greater Reſiſtibility to the firſt; only the *Uterine* Veſſels being theſe alone which are deſtitute of Valves, to prevent the Bloods Regurgitation and Stagnation, they being diſtended beyond their recoverable Spring, Break, and throw out that Blood, which is ſuperfluous in the Body, and intended for another uſe. On the ſame account, if the Blood flowed too ſparingly with great pain, it muſt hereby be expell'd in greater quantity with leſs pain, and in a ſhorter time. Or if the diſcharge was too great weakening and dangerous. Such Chalybeates as abound with Volatile Steel, and ferruginous Earth, will correct either the thinneſs, or ſharpneſs of the Blood, ſtrengthen the Veſſels, and reſtore their Tone; they will open Obſtructions, make a more regular diſtribution of the nutritive juyces, help the Circulation, and encreaſe the Secretion and Evacuation of the more VVatery, or ſharp parts of the depauperated or Saline Blood. But where there is too great a Derivation of arterial Blood, to the weak, relaxed, tumid and diſtended Glands; whereby, tho the globular part be retained, yet the Lymphatic is miſerably ſtrained off, to the weakening of the Body, by this perpetual open Drain. Theſe Waters are no leſs powerfull, for their parts being more Minute than any ſolid Medicine, they enter, paſs, cleanſe and invigorate the Veſſels of thoſe Glands reſtore their Tone, ſhorten their Diameters, reſtrain the immoderate flux of Lymph, facilitate, and encreaſe the Motion of what is poured into them hence this unnatural unhealthy diſcharge is ſoon checkt, and brought to a healthy State, where no Malignity, or veneral Taint, occaſion or attend it; which may certainly known, from both colours flowing at once. By the ſame Means Ulcers of thoſe parts are alſo heal'd up, but this requires long time -------- As to the ſucceſs of thoſe Waters in unnatural Diſcharges of the Menſes from the Breaſt, Lungs, Stomach, Inteſtines, Noſe, &c. A little more Managment is required viz. Bleeding in the Foot, *Pedilaviums*, injections of emollient emenagogic Glyſters &c. Then ſuch Waters may not only be uſed ſafely, but beneficially. For whilſt the Glyſters and Infuſions ſoften and widen the Uterine Veſſels, and leſſen their Reſiſtence, the Bleeding and *Pedilaviums* leſſen the *Impetus* of the Blood upwards, and invite it down more freely, to fill, and diſtend the uterine Veſſels. Thin Chalybeate Waters encreaſing the Bloods quantity, Force and Motion, bring them at laſt to break and diſcharge their contents the right way. --------- The Green ſickneſs is only an Effect of the diſpoſition of the Body to this Lunar diſcharge, or It's obſtruction after the perſon has had it. Here is a pale Complexion, Greeniſh countenance, low pulſe, cool and languid Body, from the Blood's Viſcidity;

which good Chalybeate Waters drunk at the Spring, with dayly Riding, will ſoon cure; by bracing the ſolids, thinning, attenuating and inciding the Viſcid Fluids, and directing their uſeleſs and ſuperfluous parts to their proper Emunctories. We ſhall only add, that in obſtructions of caſe. 2 The Sick ſhould begin with waſhing in and drinking the naturally tepid Waters, and uſe leſs Exerciſe, then proceed to Chalybeates, the like is adviſable in caſe. 4. In the Fluo ralbus begin with *Briſtol* or *Matlock*, then to Chalybeates. But in both this caſe, and *Menſes*, *Nimii*, *Holt*, exceeds them all, and may be depended on alone where the caſe is not deſperate; No Medecines nor Waters can equalize it.

33 *Barrenneſs* is another infirmity wherein we often find theſe Waters recommended by moſt Writers, without exception, for nothing can poſſibly ingratiate Waters more to the fair, than a love of Children. Therefore that we may not run riot with others, let us lay aſide the incurable cauſes of *Barrenneſs*, and enquire only into theſe that are curable, and what Waters are beſt appropriated to the ſundry ſorts of it. The incurable caufes of this diſorder are more numerous than the curable, ſome of the laſt are common to both Sexes, others proper to each, out of both, we ſhall only mention ſuch, as ſome relief may be reaſonably look'd for from Mineral Waters. As 1. Too much *Fatneſs* or corpulency, which may either render the Belly too prominent, the *Uterus* too ſlippery, compreſs the *Ovaria*, or lie in the way between them and the *Fallopian Tubes*, and ſo prevent the Expanſion of the *Fimbrii* on the lower end of the *Ovaria*, and hinder either the progreſs of the *Seminal Aura*, through the *Tubes*, or It's reaching and affecting the *Ovaria*. Or it may compreſs the *Uterus*, That there is not room in the *Pelvis* to dilate and expand It's ſelf, here ſuch Waters are indicated, as leſſen the Accumulation of Oyl in the Body by gently purging, as *Cheltenham*, *Scarburg*, *Harrigate*, *Cartmal*, *Weatherſlac* &c. Moderate Diet and Exerciſe, with leſs ſleep ſhould be uſed at the ſame time, and when the Body is ſomewhat lightened of it's load, call in the Aſſiſtence of the cold Bath. 2 An extraordinary *Lean thin habit of Body*, which may cauſe a defect of genital Liquor in one Sex, and a Collapſing or Corrugation of the Receptacle with it's *Appendages* in the other, together with a want of ſufficient

Nouriſhment for the *Fœtus*. Here a Nouriſhing diet, more ſleep, leſs Exerciſe, with the inward and outward uſe of the tepid Waters (if there is no Hectic) are required. But if this *Marasmus*, be the effect of other diſeaſes, then it's only Symptomatick; and the Waters proper in that chronic diſtemper, muſt be repaired to immediately. 3 It may be the effect of ſome *Obſtructions*, *Tumors* &c. in the *Myſentry*; the cure of which call for a long courſe of Chalybeate Waters with much Exerciſe. 4. From Errours in the Non-naturals, as by *Drunkenneſs*, this muſt be removed Temperance, Exerciſe; and a courſe of Steel Waters uſed. 2. *Gluttony*, which let be reformed by Moderation, much Exerciſe, and laxative Chalybeates. 3. Exceſſive, but eſpecially early *Venery*, here it's neceſſary, for ſometime to refrain all Acts and Daliances of that ſort; and take to a very nouriſhing Diet, much Reſt, cold Bathing &c. 4. If from Faſting, Watching &c. Uſe the ſame as in the laſt: If the Air is too moiſt, or dry, change it; in the firſt drink Steel Waters; in the laſt Tepid &c. If from too great a Relaxation of the Solids, uſe cold Bathing, much Riding, and drink ſtrong Spiritous Steel Waters, and Red Port Wine. If the *Uterus* is too ſtiff, contracted and Elaſtic, take much Reſt, Eaſe, Idleneſs, a thin ſoft watery Diet; with the uſe of tepid Waters. *Swellings* or *Ulcers* of that part call for the outward and inward uſe of drying heating calcarious Sulphur Waters; Wounds degenerating into Ulcers, require the ſame Method. Slight Inflamations require the uſe of tepid Springs. Stoppage, diminution, irregularity, or vitiation of the *Menſes*, ſee in the laſt Article, or *Fluor albus*. If from a Collection of Water or Wind, or both, in the *Uterus*, Waters ſuitable in a Dropſy are neceſſary If the Orifice of the Uterus be too lax, uſe Chalybeate Waters and riding. When the *Vagina* is too ſtiff and elaſtic, bath in the tepid Water. If too lax uſe the cold Bath, or Vitriolic Waters. When the *Labia* or *Clitoris* are ſwelled, ulcerated, chopp'd or ſore, the uſe of Sulphur Waters is good. If from ſevere Exerciſe, or working, which Bace the Solids too ſtrongly, uſe the ſame Courſe; as in too Criſp Stiff and Elaſtic a ſtate of the *Uterus* and *Vagina*. If we have touched too ſlightly, we deſire to be excuſed for ſuch Reaſons as are obvious to virtuous and modeſt Readers.

34. The *Piles* or *Hemorrhoids.* If from a ſtoppage of the *Menſes*, or from a ſizyneſs, or wateryneſs of the Blood, or laxneſs of the Veſſels, the uſe of Chalybeates and Exerciſe are requiſite. If the Effect of old Age or weartneſs, the uſe of *Bath* Water is preferable; but if they are ulcerated and turned to a Fiſtula, the inward and outward uſe of ſtrong Limeſtone Sulphur Waters, is neceſſary; but *Holt* exceeds them all.

35. A *Cachexy*, or bad habit of Body, is applicable to, and expreſſive of many Diſeaſes, few being attended with a good ſtate of both Solids and Fluids: Therefore we ſhall firſt give ſome Symptoms of the Diſtemper we mean, then enquire into it's Cauſes, Indications of Cure, and how Mineral Waters are applicable. The Symptoms are pale, yellow, white, livid red, green or tawny Colour, a weakneſs, ſloathfullneſs and heavineſs of the whole Body; a watery ſwelling, puffing up or inflation of the parts at greateſt diſtance from the Heart, and ſometimes a palpitation there, and in the Arteries, eſpecially after any ſmall Motion, a ſlow Evening Fever with a quick and thick pulſe, loathing of Meat; frequent inodorous inſipid watery ſweats; urine much, thin and crude, tho ſometimes high coloured and red; the whole Body at the ſame time either bloated in Water, or dried and parched. Sometimes a coſtiveneſs, other times a looſneſs and vomiting &c. Which ſhow the remote Cauſes to be ſuch as theſe, *viz* ſwallowing indigeſtible ſubſtances, as Mire, Chalk, Sand, Cinders, Lime, Tobacco, Pipes. Or by eating ſuch Foods as are indigeſtible by ſtrong Conſtitutions, but not capable of being rightly prepared and fully applied, to the Nutrition of the waſted Veſſels, as tough ſharp, watery coarſe Food; a lazy, idle indolent Life, ſleeping with neglect of Animal Motion. Long and profuſe Evacuations and Diſcharges, natural or unnatural as great loſs of Blood from any part, Piles, Hemorrhoids, exceſſive *Menſes* and *Lochia*, *Fluoralbus.* Looſeſs, Vomittings; indiſcreet uſe of Spiritous Liquors, or White Wine. Long and dangerous preceeding Fevers continual, or intermittent, ſurfiets, obſtructions of natural or uſual Diſcharges; intemperance, too great weakneſs of the Organs themſelves, a want of Fluids in the Body &c. From all which, this diſeaſe acknowledges for It's immediate cauſe, either a too great contractility of Laxneſs of the Veſſels, or a Vitiation or Depravation

of the fluids, or an incapacity in that power, which ſhould apply the Nutrition to the parts; as when Circulation is either too ſtrong, or too languid; in this diſeaſe therefore the Veſſels are either too ſtrong, or too weak, the fluids either too thick, tough, ſharp or Watery. The Indications of cure then muſt be, either to thin and ſoften the too thick Humours, or to reſtore a better Conſiſtence to the too Watery; either to relax the too ſtiff, or brace up the flagged and languiſhing ſolids: Either to reduce, or increaſe the Bodies Bulk; and in all to have an intent Eye upon the abdominal *Viſcera*, eſpecially where there is a fullneſs in the Liver Spleen *&c.* Where the Body is Meagre and emaciated, the Blood ſharp, the contractility of the Veſſels too great, and the Circulation too rapid; here Relaxation, dilution, ſoftening and ſweetening are required, for which purpoſes, drinking and bathing, in *Matlock* or *Stonny Middleton* tepid Waters, is the beſt courſe; but eſpecially *Buxton*, if there is no Fever, nor the Body threatened with a Hectic, in that caſe, only *Briſtol*, or *Matlock*, may be uſed, and may be ſafely depended upon. If the Body is bloated ſwell'd, pale, white or tawny, the circulation ſlow, the Veſſels relaxed, and the Fluids Viſcid, Watery or ſharp; no Waters better than *Cheltenham*, *Harrigate*, *Braughton*, *Maudſley*, *Weatherſlac*, *Stanger*, or other ſtrong Sulphur Waters loaded with Salt; for theſe Warm, and ſtimulate the Veſſels, thin the Fluids, and carry off the Humours by Stool, Vomit and Urine, and by hot bathing in them, by ſweat. But the cure muſt ſtill be finiſhed by brisk Chalybeates. If there is a want of Fluids in the Body, by too plentiful Secretions and diſcharges, or by *Hemorrhages*; then the ſtreſs of the cure turns upon ſuch Chalybeates as reſtringe much, and are alſo a little Evacuant, as *Cliff*, *Orſton*, *Malton*, *Aſtrope* &c. And ſuch as have little Salt to ſtimulate or excite the Veſſels, accelerate the Circulation, or provoke Evacuation, But here muſt be no Bathing. The leſs exerciſe is uſed with the firſt and third Waters, the better, but the ſecond kind requires much Exerciſe.

36 An *Atrophy*, or general inſenſible pineing and waſte of the ſolids and Fluids over the whole Body; and that often without pain, or loſs of Appetite, Cough or Spitting. This may ariſe. 1. From too great Evacuations, larger than the Body can ſubſiſt long under.

from ſcrophulous or other Obſtructions of the Mæſeraic or Lacteal Veſſels. 3 From an eſſential Hectic Fever, or from this Hectic ſucceeding other Violent Fevers, or acute diſeaſes, either neglected or ill cured. This diſeaſe from Evacuations, may come from different cauſes, as 1 from exceſſive perſpiration long continued, whither from too thick or warm Cloathing, or from a defect in the Solids, whoſe Secretory ducts in the Skin are dilated and diſtended, ſo as they diſcharge much more than falls to their ſhare, either ſenſibly by ſweat, or inſenſibly by perſpiration. In this caſe, cold Bathing firſt, and in Matlock, or ſome of the petrefying Waters after, and the tepid Water drunk at the ſame time, is of the greateſt ſervice. 2 From a ſaltneſs & ſharpneſs of the Blood continually ſtimulating the Veſſels, and they acting impetuouſly in Grinding down, and expelling the Fluids. This is often the caſe of Whetters, Drammers, and great Punch Drinkers &c. Here nothing equalizes Drinking *Buxton* Water and cold Bathing, the firſt ſweetens the Blood, while it dilutes and carries off the Salts, and eaſes the perpetual Stimulus of the Veſſels; whilſt the laſt Straitens, and braces up the Strainers of the Skin. 3 From ſcrophulous Ulcers, which by their diſcharges, waſte the Fluids, vitiate and conſume that which ſhould Nouriſh the Body. Here ſtrong Sulphur Waters, as *Harrigate*, *Moffat*, *Maudſley*, *Wardrew*, *Oldfield*, *Suttonbog* &c. Are of great Service. For by dayly waſhing the ſores, ſometimes Bathing the whole Body, according to the Patients ſtrength, and dayly drinking, they moſt frequently cure. Sometimes Chalybeate Waters do the Buſineſs, where the other are not to be come at. 4 From a *Diabetes*, immoderate Menſtrual Flux, (both which we have diſpatch'd before) *Diarrhæa* Vomiting or Spitting of Blood, Bleeding at the Noſe &c. If theſe Hemorrhages proceed from too great a Fullneſs, and diſtention of the Veſſels of the whole Body with good Blood; or from ſudden, Violent Motions or ſtrains of the Body, or furious commotions of the mind, or pregnancy; recourſe is not to be made inconſiderately to Mineral Waters. But where the diſcharges are from a weakneſs of the Veſſels, Thinneſs or Sharpneſs of the Fluids, internal Ulcers, hard drinking, Obſtructions of the *Menſes*, Hemorrhoids or Piles, or Bloody Dyſentry, ſuch Waters as contain much ferruginous and alcaline Earth, as *Orſton*, *Malton*, *Aſtrope*, &c. Are adviſable in the general; for they correct, abſorb, and carry off, the Acrimony of the Blood, invigorate and brace the Solids. But more particularly if from drinking, we recommend the tepid Waters firſt, then Chalybeates and Exerciſe; if from Hemorrhages. we adviſe *Holt* alone, which will do more than all the reſt together. For it evacuates, braces and greatly ſtrengthens, it's the ſame in inward Ulcers, nor for thoſe purpoſes, does the Iſle afford it's equal. 5 From Obſtructions of the Myſentery and Lacteals, whoſe cure conſiſts in cleanſing the whole abdominal *Viſcera*, diluting the Blood, ſcouring of the Lentor from the internal ſurfaces of the Chyliferous, and Lymphatic Veſſels, throwing it into the circulating Maſs, there to be Grund down, and ſent to the proper Secretory Ducts, to be ſtrained off and diſcharged; in ſtimulating, bracing, and invigorating the Veſſels, that they may ſhake off their reſty Load, act more powerfully, and durably upon it, to prepare, and bring it to Expulſion, and prevent their future Reception of ſuch unhealthy Lodgement, and Accumulation of ſuch thick earthy, viſcid, ſluggiſh matter. And here, if there is no Fever, ſuch Waters as carry the greateſt quantity of Steel, both volatile and fixt in them, bid faireſt for a cure, as *Malton*, *Cliff*, *Scarburg Chalybeat*, and indeed the whole Chalybeate claſs as *Aſtrope Stockbond Tuewhet* Spaw, *Brockhole*, *Benthal*, *Fulwood* &c. are preferable, next to them is *Cheltenham.* 6 When the *Atrophy* is from a hectic where the Blood is thin, ſharp corroſive, it's Motion quick and Veſſels weak, *Briſtol* and *Matlock* Chalenge our firſt Notice, with *Scarbug* Purging Water, drunk in ſmall Doſes, not as an Evacuant, and without it's Steel, then we have known it do wonders from it's Nitre and Alcaline Earth; *Aſtrope* drunk to three or four Pints a day, has ſurprizing good Effects here, inſtance, it's amazing cures before mentioned. The Waters cool the Blood, ſweeten it, abſorbe the Acrimony, and ſend off the Salts by the Kidneys. But we adviſe againſt *Bath* and *Buxton* here, as they heat more, increaſe the Fever, and often bring on Vomiting or ſpitting of Blood and a conſumption, if the Fever proceed not from the Gout, or in the decline of Life.

37 The *Scurvy*, this word being uſed in ſuch a Lax, indefinite ſenſe, the Symptoms, attending the diſeaſe, are ſo many and various the cauſes ſo wide, and almoſt innumerable, that I ſcarce know where to begin, but that I may be underſtood, I ſhall fix ſome

Bounds both to our Intention, and the diſeaſe, ſo far as relates to Mineral Waters immediately. By a Scurvy I underſtand a Retention and Accumulation of a highly Sulphureous or acrid Salt, or *Saline Lympha* in the Blood, which being mixt with the Laſt, and Nutrition or *Chyle*, produces (in ſtrong Bodies) in part or in whole, over the Bodies ſurface, a tickling, tingling, itching ſenſation; wearyneſs, livid, red, tawny, yellow, or purple ſpots, ſcales, ſcabs, cruſts; ulcers, ſordid, obſtinate, inclining to a Gangrene; a pale tawny colour of the Face, fetid Breath, Heat, Pain. Swelling; Itching of the Gumms, and often dropping Blood; Black corroded, and rotten Teeth, Thirſt, Reſtleſsneſs &c. All the Signs of an acrid ſaline *Lymph*, thrown and congeſted in the Secretory and Excretory Ducts of the Bodies ſurface, from this Retention of thoſe Urinous Salts in the Blood, by the Kidneys and Cutaneous Glands. That it is a Salt, is manifeſt from the Taſte of the diſcharged Lee, from the heat and ſtimulation in the Skin; and from the crackling of the pull'd off Incruſtations thrown in the Fire. That it is an acrid ſalt is evident from it's Taſte, Corroſion and Fermentation of the incruſtated Scales with Acids. That there is a Sulphur in it, is ſeen from the paleneſs of the patients Urine, from the Incruſtation Flameing in the Fire. That it's the remains of an Excrement which ſhould have been excreted from the Kidneys, is clear, not from the ſcantineſs (for that rather too plentiful) of the Urine, but from it's pale colour and inſipid Taſte and Smell. Therefore I ſay the immediate cauſe of this diſeaſe, lies in a diminiſh'd perſpiration, a conſtriction of the Secretory Ducts of the renal Glands, whereby the Watery parts paſs off freely, but the Sulphureous and Saline are retained in the Body, and thrown Back into the whole Maſs, whereby it's leavened and tainted. The remote Cauſes are, whatever may conduce to the two laſt, as long, moiſt, watery, foggy Air. 2 Whatever tends to conſtringe the pores too much, as long cold Weather, hard Froſt, a long uſe of Reſtringents, either in Food or Medicine. 3 Whatever may too much ſtimulate and irritate the Veſſels, as very alcaline Roots, Herbs, Semiputrid Foods. 4 Whatever may ſenſibly encreaſe the diſcharge of the Watery parts of the Blood, and the Retention of the Urinous Salts as too free a Uſe of Marine Salt, or Animal Subſtances preſerved by it. As Dried or Salted Fleſh, Fiſh or Fowl. Hence, 1 It is evident what are the Intentions of Cure. 2 How proper Mineral Waters ſucceſsfully anſwer theſe Indications. As to the firſt, the thick and concreſcent parts of the Blood are to be thinned, the Saline to be ſmoothed, ſoften'd and expelled, the diſſolvent acrid to be rendered Neutral, the ſtagnant and coherent to be made fluid and ſet in Motion, and laſtly, the proper outlets of the Body are to be prepar'd for their diſcharges. viz the Skin and Kidneys. As to diluting the ſaline and viſcid, adhering to the Bodies ſurface, or ſticking in the excretory Ducts of the Skin, that is eaſily and fully attained by Bathing in Sulphur or Limeſtone Waters, it being the nature of Water to dilute, of Sulphur to correct, corroſive alcaline humours; both theſe pierce the Skin, cleanſe it's excretory Ducts, from too groſs inherent particles, and make way for the protruſion of freſh, by the Secretory Glands, whereby they alſo are eaſed and unloaded. Thus, one of theſe great outlets is ſet open for the diſcharge of it's Office. The Waters being drunk at the ſame time, cleanſe the inteſtines from their acrimonious ſaline, viſcid, contents, and going by the Lacteals into the Body, cleanſe the *Meſeraic* Veſſels and Glands; thence from the thoracic Duct, by the Receptacle of Chyle, the Water is conveyed into the left *Subclavian Vein*, and ſo into the Blood where arriving at the Kidneys, by it's unuſual Bulk and preſſure, it dilates the ſecretory Tubes and with it's ſelf carries the Acrid ſulphureous Salts into the *Uropeia*; and whilſt the Vehicle thinns the Blood it's Salt irritates the Veſſels, and joyning with the Sulphur, allay the preternatural heat of the Blood, and in time, reduce it's Acrid Salt to a neutral healthy ſtate: For it's impoſſible the Water ſhould have one Effect externally, and another internally; the firſt is viſible to the Eye, and thereby fully explains the laſt to the mind. And of all Sulphur Waters, theſe impregnated with Nitre, or very little Salt, anſwer beſt. But where a ſcrophulous caſe comes upon a ſcorbutic Habit, when the ſwelling is attended with a pricking pain, Redneſs and Inflammation, the caſe is more tedious and difficult, requires a ſtricter Regimen, cloſer Application, longer time, and more cooling Sulphur Waters. viz impregnated with Nitre and Limeſtone.

There are other Erruptions of a far more obſtinate Nature, and yet belong to this Claſs. viz *Leproſy* wet or dry, *Scalyneſs*, *Tettars*, *King-Worms*, *Herpes Exedens*, *Miliaris* &c. All curable by this claſs of Waters, properly purſued. For as they are all the product of an Alcaline Salt predominant in the Blood, and as all Animal Food chiefly Abounds with this, and a Heavy Glewy Oyl, therefore they muſt be refrained, and a vegetable diet ſubſtituted in their ſtead, but not of the pungent, ſtimulant Tribe; as *Muſtard*, *Pepper*, *Horſe Reddiſh* &c. But of the temperate, abſorbent, cooling Claſs. What terrible Tragedies have we known committed on human Bodies, by the uſe of hot Antyſcorbutic Vegetables, in lean Perſons, under theſe Diſeaſes? What ever ſervice the *Romans*, and ancient *Britons* might have found from their *Cochleare* and the like, we now put no ſuch Confidence in them; eſpecially in hot, meagre hectic, Aſtrophic Perſons; but in a bloated cacochymic ſcurvy.

There is yet a Third kind of this Diſtemper, which is, when this Saline Acrimony has a greater Mixture of Lymphatic Viſcidity, joyned with it; then, not being propelled to the Bodies ſurface, and the Salts not excerned in Erruptions, they fall on the Membranes of the Muſcles, both common and proper, or on the Membranes of the Bowels, or *Perioſteum* of the Extream parts, as Legs, Thighs, Arms, Hands, Feet, Wriſts, Ancles and Shoulders; hence a Lazyneſs, Stiffneſs, Wearyneſs, Heavyneſs, and pain of the Muſcles; eſpecially of the Legs, Loins and Back, chiefly in a Morning. Fatigue on the leaſt Motion, particularly on going up or down an Aſcent, a ſmarting and tingling in the Muſcles, gnawing, throbbing, violent, quickly piercing pains, encreaſing at Night, upon the Limbs, Joints and Bones; terrible obſtinate ſordid Ulcers on the Legs. This Scurvy often ſiezes ſuch about the Age of Manhood, as had laboured ſeverely under the Erruptions of Claſs firſt of this Diſeaſe, in their Youth; for then perſpiration begins to leſſen, the Skin to grow thicker, and the ſcorbutic Salts are not ſo truely diſcharged that way; In this part of the Diſeaſe, we recommend *Cheltenham* Waters drunk for a conſiderable time, before all the Mineral Waters yet diſcovered in *Britain*; but let cold Bathing be joyned with them, in the intermittent day of drinking; or in want of that the tepid VVaters inwardly and outwardly. But after this Stage of Life, or in weaker Conſtitutions or ſuch as have ſuffered greatly by Anxiety, Cares, Troubles, Grief, &c. This Scurvy ſtill puts on another ſhape, for then.

In this fourth kind it occaſions Aſthma, Jaundice, Colic, Nephritic. Splenetic and Hepatic pains, or pains exactly mimicking them; In the two laſt caſes, ſtrong light, Nitrous Chalybeate VVaters (which always contain Sulphur, tho' not perceptible) are certainly a ſovereign Medicine, if regularly and diligently uſed for a conſiderable time at the Spring, their whole principles ſeem as tho they were contrived, united. and proportioned, on purpoſe to anſwer theſe great Ends. The common vehicle thins the Blood, the Nitre gently cools it, and the whole Body, attenuates, and incides the Viſcidities in the ſmall Veſſels, and Glands; ſo moderately opens the outlets for the diſcharge of the briniſh Salt, and more Glewy, Earthy parts of the Animal Fluids, by Stool and Urine, whilſt the Skin, and it's excretory ducts are opened and cleanſed, and perſpiration encreaſed by Bathing, and all this for a long while together, or whilſt the VVaters are uſed. The VVater is a ſoft eaſy circulating fluid: The Salt ſtimulating, diſſolving and cooling, the Steel attenuating and bracing the Sulphur, contrary to putrefaction; the little Earth abſorbent and ſweetening, by it's means the diſcharge of the Salt in the Blood, is very much facilitated; for being alcaline, porous and ſpongy, much Salt is lodged in it's pores, and carried off with it, beſides the naked Salts contained in the Stools urine and perſpiration. All theſe principles united, act as ſo many combined Gentle Antiſcorbutics; In the mean time, the Spirit in the Water, Being finer and ſubtler than artificial volatile Spirits and Salts, make their way into the remoteſt, diſtanteſt, obſcureſt cells, and ſmalleſt Glands, and Veſſels of a humane Body, thins, cuts and ſets in Motion, the Viſcid, Saline, ſtagnant, corroding, obſtructing accumulated fluids, prepares them to be thrown into the next Veſſels, and ſo on, till they are diſcharged. At the ſame time, this Spirit irritates, braces, and invigorates the containing Veſſels, hence theſe Water drinkers loſe not but ſenſibly get Strength, as well as Health, in the uſe of them. But It's not a Curſory, tranſient, heedleſs uſe of them that will anſwer theſe valuable deſired Ends. But a ſerious, tedious, ſtrict judicious uſe of them, that muſt give Relief.

But the moſt dangerous, and tragic Symptoms of this diſeaſe make up a fifth claſs: When from the Brinyneſs and Acridneſs of the Lymph, the Veſſels in any part of the Body are Corroded, thence proceed ſeveral *Hemorrhages*, without any Viſible *Wound*, *Strain*, *Bruiſe*, *Ligature*, *Preſſure* or Obſtruction; as from the *Stomach*, *Inteſtines*, *Kidneys*, *Uterus*, *Lungs*, *Mouth*, *Noſtrils*, *Liver* &c. Here we know very little of the ſervice of Medicine, and if ever the afflicted find Relief, it muſt be from ſuch Waters as contain a Mineral Spirit, much Alcaline Earth, Steel, Nitre and Ochre, as *Malton*, *Orſton*, *Cliff* &c. But in this caſe, there is no dependance on any in Compariſon of *Holt*, which is far beyond all; it affords all theſe Principles which bid faireſt for help. What wonders have we known ſuch Waters do, when Art has ſtood mute, and all probability of Recovery was loſt?

We have not yet done with this *Proteus* like Diſtemper, which mimmicks moſt others. Sometimes it putrifies, and waſtes the *Liver*, *Spleen*, *Sweetbread* and *Myſentry* with a rancid Oyl, and acid putrified Salt. Here both internal and external uſe of ſtrongeſt Sulphur Waters, having little or no Marine Salts, or the ſtrongeſt Chalybeates with Nitre and much Ochre, may be tried; but, as from Medicine, we expect no Relief; So, but little, and ſeldom from ſuch Waters. If theſe ſame Salts fall upon the Kidneys or inteſtines, they cauſe ſharp *Stranguries*, *bloody Urine* and *Stools*. If upon the Nerves, *Cramps*, *Convulſions*, *Contractions* and *Twitchings*; in theſe caſes the naturally warm Waters exceed all others, as *Bath*, *Buxton*, *Matlock*, *&c.* If there be a viſcidity of the Juyces, together with a laxneſs, and weakneſs of the Veſſels; *Leucophlegmatia* Dropſy, white Swellings in ſeveral parts of the Body will enſue; then very ſtrong Sulphur Waters impregnated with Marine Salt and Steel, are the ſureſt Reſort -------- If there is a predominancy of groſs earthy parts in the Blood, whether from a coarſe earthy Diet, or from the more watery parts of the Blood being ſtrained off by a pale inſipid Urine; or from an indolent, retire, Sedentary Life, neglect of Exerciſe, with much ſtudy, the brisk, light, clear Chalybeates are beſt; for either too ſtrong purging, or too hot ſalt ſtimulant Waters, are oppoſite to the deſign, and add to the Diſeaſe inſtead of curing it. The firſt and ſecond Claſſes of the Scurvy, are generally divided into the hot and cold, the firſt attended with a lean habit of Body, Heat, Thirſt &c. *Scarburg* is an incomparable Water. And *Harrigate* in the cold Scurvy. Hartlepool is an excellent Antiſcorbutic, and has wonderfull ſucceſs.

38 We ſee that all *Inflammations* are either *reſolved* and *diſcuſs'd* or come to *Suppuration*, and *Impoſtumation*, except the inflamed part is Glandular; the Heat very weak; the impacting matter very thick, and unfit for Motion, the Veſſels of the Gland greatly diſtended and the Ducts, by which it ſhould diſcharge it ſelf, obſtructed; there we have a hard painleſs Tumour called a *Schirrus*, which by long ſtanding increaſes, and in time, upon any Accident, as great Motion, or Attrition of that, or the neighbouring parts, a Stroke, Bruiſe, irritating Medicines applied &c. Becomes painfull, the Veſſels on it's Edges inflame, the ſwelling becomes malignant, a putrid Acrimony becomes more ſenſible, mixes with the *Schirrus*, taint's it's ſlow circulating humours, with a cauſtic, corroſive Liquor, of the moſt malignant kind, call'd a *Cancer*. which tho in aged People of a bad habit of Body and diſpoſed to it, or where the acrid, Cauſtic, Malignant Salt, is become ſo powerful and irreſiſtible in the Body; we expect no Relief; except in a few caſes from the Knife; yet in other caſes (tho the diſeaſe is always deplorable and deſperate) not only occult, but ſome ulcerated Cancers, have either been eaſed and palliated, or totally cured, if of a Benign nature; by ſome Mineral Waters. In Occult ones *Briſtol*, *Matlock*, and *Buxton*, uſed inwardly and outwardly, have been found helpfull. But in ulcerated ones, only ſtrong Chalybeates, abounding with Ochre and Alcaline Earth in great quantity, are inwardly uſefull. If in *Schirrus's* any Waters are uſefull, they are the above tepid Springs, drunk and applied, in their natural warmth, whilſt yet poſſeſt of their Rich, Volatile, Mineral Spirit; for, as we have often ſaid, when that is gone nothing remains but the common Vehicle, and ſome little fixt parts, chiefly Earth, which has nothing but it's abſorbent property to recommend it. But the Spirit being of ſuch a volatile nature, as no Veſſel of humane Contrivance can retain it one hour, far leſs Animal Bodies, which are dayly ſpending diſcharging and leſſening both their Solids and Fluids by innumerable outlets; then this Spirit by the ſubtleneſs and penetrating nature of it's parts, may, together with it's tepid Vehicle, pierce, ſoften, and looſen ſlowly, ſome of this impacted Matter, and leſſen it, till the ſhut up Veſſels are again opened, and the ſtagnant matter put in Motion, and ſo inſenſibly Waſted. Mineral Waters have often done wonders of this ſort, even beyond Expectation or Belief, in White ſwellings and ſcrophulous

Tumours, and why not ſometimes in theſe, by a long and patient uſe of them, whilſt the Humour is harmleſs, and not yet become Malignant? No Objection, that we foreſee, can be offered to this, beſides the hardneſs of the Matter, but then as all Tumours are generated of Animall Oil in it's Cells; and nutritious Lymph in it's Veſſels, they muſt only differ in the ſundry proportions of theſe two principles; their hardneſs, and continuance, both theſe coagulate, and are concreſcible, tho' both continue Fluid, whilſt they circulate in the Veſſels, and preſerve their proper degrees of Motion and Heat, but when once they ſtagnate in the Veſicular Cells and Vaſcular Glands, their concreſcible parts being Earth, they dayly loſe of their Fluids, become more fixt, thick, hard, and immoveable, till they acquire the conſiſtence of a ſolid, without any more malignity, than is in the other parts of the Body; tho' the affected part be monſtrouſly diſtended, as we ſee the Lymphatics are, in a Dropſy; and the fatty Cells, in a *Wen.* But when in a *Schirrus*, either by Male adminiſtration of Medicines, or outward accidents, they quickly acquire a corroſive cauſtic Malignity, from conſtant Retention of the alcaline Salts, the Oyls becoming rancid, and the ſerum loſeing it's ſweetneſs, and receiving a Taint from both. Hence I have ſeen *Cancers*, eat Fleſh, Plaiſters, and Skins in a few Hours, and whereever this *Lee* or *Blood* touch'd the Body, they certainly fleard off the Cuticle, and inflamed the places? So, as a *Mortification* was prevented with difficulty. Here Ochre and Mudd from the bottom of Chalybeates, and black Sludge from Sulphur Springs, laid on freſh twice a day, then waſhed off with the Water, and freſh laid and kept on again, the Water at the ſame time regularly drunk, we ſay it has wonderfully mitigated the pain, leſſened, and taken off the Corroſiveneſs, and the blackneſs and lividneſs of the parts, and ſometimes, made a compleat cure. Inſtances whereof we find in *Floyer*, and *Barnard*, and *Browns* Hiſtory of cold Bathing, and in our firſt Volume.

39 When the Bones in general have attained a greater degree of Solidty, Firmneſs, and Reſiſtibility of a Viſcid *Lymph*, the Fleſhy and Glandular parts being more flexible and dilatable, this *Lymph* & Acrid Oyl, fall upon them, and it being the Nature of *Lymph* and *Serum* (out of which all Animal Nutrition is made and derived) to coagulate, and after coagulation, eſpecially if mixt with Oyl, to turn

acrid, and form ſcrophulous, ſtrumatic or Kings Evil, Tumours, and Ulcers of all kinds; which, from Obſervation, and Examination, we moſtly find begin in the *Myſentry* alſo; few having external ſcrophulous Tumours or Ulcers, from the Conſtitution, and the *Myſentry* not affected; and very often the *Lungs*, *Liver*, *Sweetbread*, *Spleen*, *Kidneys* &c. Hence a *Jandice*, *Dropſy*, *Fluoralbus*, *Ophthalmia*, *Aſthma*, with all the Brood of a *Scrophula*, which, if hereditary, is riveted in the Conſtitution, by tainting all the Animal juyces, becomes ſtill more prolific and frightful, tho' it appears more mild at firſt, ſeating it's ſelf in the *Myſentry*, Glands of the Neck; Throat and Groin, then fixes on the Muſcles, Tendons, and at laſt ſpares not the Bones themſelves, but turns them ſpongy, protuberant, carious and rotten. Now the Identity of Humour collected and diſcharged from all the Glands; the Identity of Symptoms in proportion to the Nearneſs or Remoteneſs of the Glands to the Heart, prove the Identity of Secretion in the ſundry Glands; and therefore the Identity of the Waters Efficacy, according to the Obſtinacy or freſhneſs of the Diſeaſe, the partial, the more general, or total Taint of the Animal juyces; the Vigour, or weakneſs of the Solids; the diſeaſes being hereditary, natural, or accidental, the goodneſs or badneſs of the Conſtitution &c

Now, no ſuch cant, or cloak of Ignorance, muſt be allowed in Phyſick, as occult Qualities, or ſpecific Remedies, this only Suits the Mouths of ſuch indolent or Lucrative Gentlemen, as exclaim againſt the Examination of Mineral Waters, becauſe (ſay they) their virtues cannot be determined a priori by any ſett of Experiments, tho' never ſo juſt and exact; and could they effectually prevent ſuch an Examination, too uſefull points would be gained. 1 The principles of theſe Waters, and conſequently their uſes would ſtill be a ſecret, or at moſt but gueſs work. 2 The Patients muſt implicitly take their word for them, and then, whatever Blunders and Errours they committed, to the Miſchief of the ſick, would all be in the dark, and lye undetected. But if natural, compounded Bodies, are ſeparable, without Ignition, and the whole principles of any ſuch Bodies, are divided, and produced ſeparately, without the loſs of any, (which may be known from comparing the ſeparated principles, with the whole *Congeries* of Mater, of which this is the Reſult, and ſeeing firſt what they are, then which are diſſolvable or indiſſolvable in Water) if we know the Effects of theſe principles on humane Bodies, ſeparately, and together, ſhould we afterwards find the like Combination of the very ſame principles; with ſome variation in their Proportions, Figure, Bulk &c. Why may we not pretty near aſſert their Effects with theſe little Alterations, No Phyſician or Apothecary will allow this a very difficult task in any of the diſpenſatory compoſitions, and what ſhould make it ſo inexplicable in the caſe of Waters, Medicines muſt be own'd to act mechanically, either to the benefit or hurt of the Receiver, but if we know not the principles of Waters, we neither can ſay how they act mechanically nor by what Mechaniſm they produce their Effects. Nor can we poſſibly ever tell where, or how, they are to be uſed, ſince every Diſeaſe which require their Aid, ariſes from ſo many different cauſes, attended with ſuch various Symptoms, and in ſo different, and ſometimes, oppoſite Conſtitutions; ſo there is an end of their uſe at once. The Effects of Mineral Waters in the King's evil, are very explicable, for as it ariſes from reſtineſs or weakneſs of the Veſſels, and toughneſs or ſharpneſs of the Fluids, therefore whatever thins and diſſolves this Viſcidity, or clears the *Miſeraic Glands*, *Lacteals*, and *Lymphatics*, lets in good laudable chyle, in due quantity, into the Blood, reſiſts putrefaction and concreſcibility, ſtrengthens and Braces the Veſſels and Solids, and opens the obſtructed Canals, will ſurely be of uſe here; if the Spring of the Solids, and their Reſiſtibility of the Fluids be not intirely loſt, but all theſe intentions are anſwered by proper Mineral Waters, uſed a proper time, and dayly Experience proves it that where Medicine cures One in this caſe Waters cure Ten, and would cure many more if they were well known, timely and honeſtly recommended. And that not only from the ſuitableneſs of their parts, but cheifly from the ſmallneſs of the particles of their impregnating principles. One great Reaſon why Medicines ſo often fail, is the giving ſuch things as are neither diſſolvable in Water, nor diviſible by the *Saliva*, *Biliary*, & *Pancreatic Juyces*, nor by the *Heat and Action* of the *Inteſtines*. For can the moſt elcborated and reputed ſpecific Groſs pouders do in Pills, Electuarys Bolus &c. Whoſe Medicinal parts are ſcarce capable of a diviſion equal to the Magnitude of a Blood Globule, when a particle of that ſize cannot enter the Lymphatics and Glands, the ſeat of

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the Diſeaſe? Tho we find by Evaporation, that Mineral Waters leave for fixt parts, their Earth and Salts, whoſe particles are perhaps heavier and ſolider than the Fluid in which they are mixt, and therefore they remain fixt after their Vehicle is ſpent; but this may not be from the largeneſs, but ponderoſity of their parts. For Salt of all other things, contains the moſt matter under the leaſt ſurface; and this very Gravity is one of the properties whereby it acts with greater force againſt the Sides of the Veſſels, and alſo upon the Fluids wherewith it's mixt, and by it's Angles, gives a ſtimulus to the Veſſels, being darted into them, it irritates and rouſes them out of their inactive, languiſhing ſtate, ſets and keeps them in Motion, whilſt the Lentor begins to be ſhaken off; and the nutritive particles in the Blood come to touch the internal ſurface, where ſome of them are attached in each Circulation, encreaſing and ſtrengthening them; and the Stimulus of the Veſſel not only anſwers this purpoſe, but when irritated, it contracts, it's Sides come nearer to one another, and the Diameter is ſhortened, hence it's internal Surface is more rugged, the abraded interſtices mote readily come at, by the interfluent Nutrition, than when dilated and extended; for then it's Coats were thinner, weaker and ſmoother, whilſt the Lentor lining them, laid in a great meaſure between the Veſſels, and Nutritive, Circulating Fluid. Another property of Salts is their diviſibility, hereby they are fitted to paſs the ſmalleſt Capillaries, of the moſt conglomerate Glands, and turnings of the whole Body. Of this we are convinced from the Salts fixing in the moſt fine dilicate Tubes of the Brain and it's Membranes, in Fevers: Hence Dilirium and Phrenzies, the Urine having been firſt pale crude, ſcanty and with little or no ſmell: And as the diſorder of the Head goes off, the Urine is higher coloured, more plentiful and depoſites a Sediment. The ſame is manifeſt from a hundred Inſtances, but tho' this be the Nature of Salts, yet they differ very much; for Vitriol, and Alum coagulate the Blood, and Serum, Marine, Rock Salt, and Sal Gemm heat, dry, parch, and ſhrivel the Solids, expell the Simpler, Smoother and Finer part of the Fluids; hence they diminiſh the Bodies bulk, encreaſe the Earthy parts of the Blood, both the Salts and it change their nature, act with greater reſiſtibility againſt the Solids, abrade and tear them more, whilſt theſe Salts themſelves continues in the Body unchanged, and may be recollected from all the Fluids. But theſe are the Effects of the abuſe of them, by habitual uſe in great quantity, with too little Liquor to dilute them. The proper Waters then in the King's evil are Ichley, Moffat, Willowbridge, Cheltenham, Harrigate, Crofts, Braughton, and all the Nitrous Saline, Ferruginous, Ochry Chalybeates. But in the Inflammatory evil, Cheltenham, with all the laſt mentioned Steel Waters and Moffat. In the œdematous kind, Harrigate, Braughton, (and for waſhing Maudſley, Weatherſlack. with all ſaline ſtrong Sulphur Waters. when ulcerated, Holt.

40 Gout, Siatica, &c. It's plain from the Seat, Symptoms and Effects of this diſeaſe, that it acknowledges for It's neareſt cauſe, an Attraction and Coheſion of Earthy alcaline Acrimonious matter in the Fluids, with a narrowneſs of the containing Veſſels. To bring this Diſeaſe to a height theſe Requiſites are neceſſary. 1 That it be in places at the greateſt diſtance from the projectile force of the heart, where the Circulation is ſloweſt and weakeſt. 2 That it be in the ſmalleſt Veſſels, where the particles of the matter of the Diſtemper lie neareſt one another, where feeling leaſt of the projecticle force, they may come within the power of Attraction, and ſo of Coheſion. 3 That it be in places, and Veſſels, that reſiſt Motion moſt, from their Hardneſs Solidity and Exerciſe, which therefore muſt be the Lymphatics, not ſanguiferous Veſſels. 4 That theſe ſame Veſſels muſt have been hereditarily, acquiredly or accidentally ſtiffened, and had the natural diſcharge from the parts about them diminiſhed, and their Load thereby encreaſed, hence it ſeldom attack Females, they having laxer Solids, and rarely Males before they are paſt middle age, and of them chiefly ſuch as have immoderately indulged themſelves in Venery, late Hours, rough Wines, Acids, rich Foods dreſt up with Warm pungent, ſaline Aromatics or Antiſcorbutics. Milk Saps, Water, or ſmall Beer Bibers, Temperate Chaſt Perſons, and ſuch as content themſelves with plain Meat and Drink, or are of a cool temper of Mind, ſuffer not much by this Diſeaſe, but all ſtrong paſſions brace the Nerves, till they are weakened and worn out. Intemperance, Debauchery, exceſſive Venery, a free uſe of tartarous Wines, violent Exerciſe long continued, long and intenſe Application of the intellectual Faculties, Indolence and Idleneſs, Surfieting &c. Being the common procurers or remote cauſes of this Diſeaſe. It's hence plain that they muſt cauſe crudities and indigeſtion, Flatu-

lency, Belching, Nauſeas, Coſtiveneſs &c. Whereby the Aliments are not duely prepared in the Stomach, the Chyle not fully digeſted and elaborated for affording Nervous Juyce. From this crude chyle the digeſtions muſt be vitiated, the Blood cannot regularly, and eaſily, paſs the capillary Veſſels, natural and neceſſary Evacuations muſt be diminiſhed, or ſuppreſſed, as Perſpiration, ſweaty Feet and Hands &c. But the Conſtitution being yet pretty good and ſtrong, gives it no Lodgement in the abdominal *Viſcera*, or ſurface of the Trunk of the Body, but throws it upon the Extreams. The humours being neither ſo viſcid, watery or cool as to fall upon the Glands (which are not lax enough to receive it) but being alcaline, thick and acrimonious, it fixes on the Lymphatics of the *Perioſteum*, ſtops there and excites moſt violent racking pains, till the pain calls an Afflux of Blood and Lymph to the parts, whereby they are relaxed, ſoftened, ſmoothed, and warmed, the contained matter in the ſmal obſtructed Veſſels is diluted, attenuated, grund down, ſet gradually in motion, prepared for and thrown off by inſenſible perſpiration. Hence it's obvious. 1. That except in caſe of a Fullneſs of Blood, or ſome other preſſing Symptom, bleeding is neither proper nor adviſable, ſtrong purging muſt do Miſchief, as all other Evacuations which waſte and diminiſh the thin watery ſoft and ſmooth parts of the Blood; but ſuch as leſſen it's alcaline acrimonious part by Diaphoreſis, are highly adviſable. 2 That before all Things, the firſt paſſages muſt be cleanſed digeſtion reſtored, and the morbific Liquor, whether yet circulating in the Veſſels, or fixt in it's proper place, muſt be carried off, and a freſh Generation thereof, muſt be prevented, as much as poſſible. 3 During the fit, we allow of the uſe of no Mineral Waters except *Bath* or *Buxton.* Or ſhould the fit take an unhappy turn, and fall on the Head, Breaſt, Stomach or Bowels, the uſe of all other Mineral Waters we have, except *Bath*, muſt be very pernicious. 4. Out of the fit, the uſe of proper Mineral Waters, is the ſole ſure *Aſylum* left us; but then they muſt be adapted with Judgment, to the Age, Conſtitution, Strength or Symptoms of the Patient. For if he is on the decline of Life, has had his Conſtitution weakened, by frequent. ſevere, and long returns; eſpecially if it has lately riſen up, or turned inward upon him; the Bath Waters are his only choice, and theſe drunk for a conſiderable time in ſmall quantities, with proper intermiſſions. In a regular Gout, from exceſſive drinking, ſurfieting, keeping late and unſeaſonable Hours, obſtruction of perſpiration &c. *Buxton* will anſwer all intentions of diluting, relaxing, ſoftening, waſting, and ſeparating any Gouty *Moleculæ* in the Blood, waſhing the Lacteals, promoting perſpiration &c. But with drinking, Exerciſe, and Friction of the parts, we would ſtrictly enjoyn Bathing, the great Benefit whereof, we have often ſeen, let Theoriſts philoſophize to the contrary, what they pleaſe. In a *Gout* from Gratification of ſenſual pleaſure, hard and late dayly ſtudy, cold and moiſt weather, tho it be proper to begin with *Buxton*; yet by all means, ſhould a courſe of Chalybeate Waters ſucceed it; for they brace up the ſolids, prevent preternatural Coheſions of the Fluids, and ſtrengthen the Bowels. In an *hereditary Gout*, prevention is to be ſtudied early in Liſe, the uſe of *Buxton* ſoon in the Spring, or ſome briſk light Chalybeats in Summer, ſtrict Temperance, and a moderate uſe of all the non naturals, a Milk diet, light White Meats, and a draught of tepid Water every Night going to Bed, are to be purſued without one Errour or Failure; if the perſon would eſcape, or be favourably handled. In *Gouty diſpoſitions*, with weak Conſtitutions, where Chalky or Tophaceous matter is thrown on the Lungs, cauſing an *Aſthma*, or on the *Viſcera* of the Belly, the Patient ſhould begin early with *Buxton*, then adjourn to ſome convenient, proper light Chalybeate, which courſe in this caſe has done wonders. But truely the ſucceſs of one or all of theſe Waters, will be of ſhort duration, except the remote cauſes be removed, and Temperance with dayly exerciſe, proper diet, and good Hours be practiſed conſtantly. And after a totall recovery the cold Bath muſt not be neglected, by ſuch as are not aged, hectical, conſumptive, or have their ſolids ſhattered and conſtitution almoſt worn out, or have endured ſeveral ſhocks on the Head, Breaſt or Stomach. In caſe of a hectic ſucceeding the Fit, we adviſe the uſe of *Briſtol* or *Matlock*. or if it leave any Taint on the *Viſcera* of the Belly, by Obſtructions, Ochry ſtrong Chalybeates are beſt. In caſe of a Stone ſucceeding it, *Buxton* exceeds all, but if it leave an intolerable *Dyſuria* or *Iſchuria*, *Matlock* gives ſpeedieſt and ſooneſt Relief. But if both warm Waters and Chalybeates be not drunk with their volatile parts, they ſignify nothing.

41. Near allied to the Gout is a *Rheumatiſm*, which is a fearful tearing pain, in the muſcular and membranous parts chiefly, as *Knees*, *Wriſts*, *Legs*, *Thighs*, *Arms*, *Loins*, *Shoulders*, *Neck* &c. If fixed, it's properly a *Rheumatiſm*, if it ſhifts and changes places often, it's an *Eratic* or *Scorbutic Rheumatiſm*. When it's fixt and continues, long and violently, it often deprives the Joynts of uſe and motion, and ſometimes diſtorts them, but ſeldom afflicts much before Manhood. It takes it's riſe moſtly from obſtructed perſpiration, wet, cold, after ſtrongExerciſe, or hard Labour, by drinking ſharp, weak, watery immoderate Draughts when the Body is very hot. Very often a Fever attends the firſt invaſion of the Fit. Hence this Diſeaſe owns for it's immediate cauſe, too great a Fullneſs of the Lymphatics with a viſcidity, and ſome Acrimony of their contained Lymph. Here it's obvious that Diluting, Relaxation and Softening, are the chief Indications. That the firſt two are performed at once, by the inward and outward uſe of the Tepid Waters, or of bathing in Sulphur Waters made Tepid, is as plain; and alſo that the Deſign may be anſwered in a longer time, by gentle laxative Chalybeats. Therefore in this Diſeaſe, *Buxton*, *Matlock*, and *Stonny-midleton* challenge the preference; then the light Chalybeates. But ſuch as would act on ſure Grounds, and are in Circumſtances to do it, ſhould firſt uſe Tepid Waters, and the Chalybeats after. If the Diſeaſe fix on the Stomach or Bowels, in the decline of Life Eſpecially, *Bath Waters* or *Buxton*, are moſt effectual, except a Slow hectical Fever attend, then they will be too warm, and only *Matlock*, *Stonny-midleton* or Chalybeates ſhould be adviſed. If the Body is groſs and corpulent, the Juyces viſcid; laxative Chalybeates, or the ſaline Sulphur Waters drunk are proper. If the Diſeaſe ſieze on hectical Conſtitutions, *Matlock* in this caſe is before any, being equally prevalent againſt both Diſtempers. If the cauſe of the Diſeaſe had Alcaline Acrimony enough along with it, it would change to a Gout. If it's ſeat were in capillary ſanguiferous Arteries, the fit would be ſhorter, and end in an *Impoſthumation*. But after all, *Cold Bathing* alone with proper care and a ſuitable *Regimen*. have cured more of this Diſtemper, even when the parts have been diſtorted, and loſt their uſe, than all the Medicines and Mineral Waters in *England* taken together, but then no Fever has attended, or it is gone off before cold Bathing was begun.

42. Intermittent Fevers, Theſe have their Fits return every day, every other day, or every third day, ſometimes only once a Week; in ſome they obſerve no viſible Period in their Returns, others they attach twice in one day, and only once, or not at all, the next day; others we have known ſeveral fits every day. The fit begins with cold and ſhaking, or without it; the firſt is called an Ague, the laſt an intermitting; they either affect the whole Body, or a part of it, as one ſide of the Head, and exactly mimick a *Hemicranium*; or one Eye, and reſemble an *Ophthalmia*; or one Kidney, and is like a fit of the *Stone*, or the Lungs, and impoſes on the Patient and unwary, for a *Cough* or *Aſthma*; or ſiezes on the Bowels, and paſſes for a *Diarrhea* or *Colic*, or on ſome Muſcles or Membranes, and is taken for a fit of the *Rheumatiſm*, or on the *Throat* or *Sides*, and goes for a *Quinſy* or *Plurisy*; or on the *Liver* and mimic a *Jandice* exactly; or on the Nerves and imitate *Hyſterics* or *Hyppo*. But whenever it appears in theſe, or the like partial Symptoms, the Fraud is eaſily diſcovered by the following Marks. 1 The pain comes on at a certain time, rages intolerably, and at the end of ſo many Hours, either remitts, or evaniſhes wholly, till the next period. 2 The Urine at the going off of the fit, is high coloured, after ſtanding a little, is turbid, muddy, and let's fall a Sediment, often lateritious. 3 Theſe mock Diſeaſes treated as genuine ones, give no way to the common practiſe, but only to that of intermittents. We ſee plainly the cauſe of all intermittents is a Relaxation of the Solids, and great Viſcidity of the Fluids. It's alſo clear from *Sydenham*, *Graunts Bills of Mortality*, Engliſh Hiſtory, and Phyſical Writers, that intermitting Fevers have their dark periods of return, wherein they become epidemic, ſiezing all Ranks, Sexes, Ages, and Conſtitutions, in all parts, City and Country, but chiefly low and marſhy places; at which times, a Slight ſtoppage of perſpiration, wet cloath, moiſt or night Air, preſently infect the ſtrongeſt with it, but when either a Second, or third day Ague, call'd a tertian or quartan, becomes chronic, and goes not off on the Approach of Spring, or Autumn, nor by proper Medicines, but diſpoſes the Sick to other diſeaſes, as *Jaundice*, *Dropſy*, *Scurvy*, *Rheumatick*, or *Arthritic* pains &c. Then comes in the Expediency and Excellency of Mineral Waters, for if the Stomach and Bowels are fowl, it's known from loſs of Appetite, Loathing and Vomiting, bitter Taſte of the Mouth, furring

on the Tongue, Throat and Palate, fullneſs and ſwelling of the Belly and Legs; then muſt Recourſe be had to the Purging Waters either Sulphureous or Chalybeate, as *Cheltenham*, *Harrigate*, *Scarburgh*, *Cliff*, *Orſton*, *Malton*, *Weatherſlac*, *Cartmal*, *Stanger*, *Tarleton*; or *Hartlepool* and this ſhould be a conſtant rule, that Attenuation, Bracing and Evacuation, are to be carried on together, here *Malton*, and *Scarburgh* Waters ſhould be drunk mixt, the firſt being a moſt rich Chalybeate, the laſt a moſt eaſy cooling purging Water. But when *Malton* is to be carried to any diſtance, let it always be taken up out off the full Baſon, ſo will it carry without loſs, but *Scarburgh* can loſe none of it's purging quality, without Adulteration. *Malton* old Well Water, if taken up out of an emptied *Reſervoir* contained only a Volatile Steel and Vitriol; but when taken up out a full one, which had not been emptied of a long time, even evaporation it's ſelf carried not off all the Vitriol, for the dry Sediment being diſſolved in Water, and let ſtand till it clear'd, this Water pour'd on Pouder of Galls at Night, next Day was of a deep Opac Purple, or Black. If this chronic intermittent happen to weak or old People, *Bath* Waters alone are to be depended on; If it has brought Jaundice, Scurvy, Swellings of the Legs, Feet, or Thighs *Cheltenham* or *Harrigate* are the moſt proper. If the Scurvy induced by it, be of the hot inflammatory kind, *Cheltenham* and *Scarburg* are beſt. If it has brought on a ſtoppage of the *Catameniæ*, then the ſtrong Chalybeates are moſt adviſable, as *Cliff*, *Malton*, *Weatherſlac*, *Scarburgh Chalybeate*, &c. If it has brought on a *Gout* or arthritic pains in the decline of Life, *Bath* Waters are certainly beſt. If it has infeebled the Conſtitution, or vitiated the Fluids, of lean meagre People, ſo as to bring on a Hectic and Cough, let that firſt be taken off at *Briſtol* or *Matlock*, then uſe a courſe of ſtrong Chalybeates, to brace up and ſtrengthen the Solids, and carry off the firſt. If the Diſeaſe is attended with a Looſeneſs or Lowneſs of Spirits, the uſe of ſtrong reſtringent Chalybeates is indicated. If attended with Pleuritic or Peripneumonic pains and Hoarſneſs without a Fever. The light Chalybeates drunk tepid are beſt (how to warm them we have ſhown before,) they muſt be drunk the Minute they are poured out of the Phial, and every freſh draught ſhould be thus warmed a new. As to Bathing in the Sea for cure of chronic *Agues*, I look on the Attempt to be raſh and dangerous, except the Perſons *Stamina* ſtill good, the Fluids not too Viſcid, nor the Obſtructions too clinched, in which caſes many have been killed, having had no previous preparation for it.

43 A *Hectic Fever.* Is very gentle at firſt, being obſervable only in the Palms of the Hands and Soles of the Feet, a quickiſh pulſe, a ſudden redneſs of the Cheeks, eſpecially after eating, when it has it's exacerbations; tho continually on, yet not always alike; then come Heat Thirſt waſting of the Solids, Reſtleſsneſs &c. With a ſmall hemming Cough, ſudden heats, more difficult breathing, pains of the Side, Breaſt, or from Breaſt to Back; or from Side to Side, or to the Shoulder &c. With all the other ſigns of a Peripneumonic Fever, from the weight, lightneſs, heat, cold, dryneſs, moiſture or ſharpneſs of the Air; too groſs, dry, viſcous, or acrimonious a chyle; too hard Labour or Exerciſe: Hallowing, much Singing, Wounds, Bruiſes, too great Evacuations, which have drained off the Watery parts of the Blood, by Sweat, Urine, Stool, Spitting &c. A Natural Diſpoſition, hereditary Taint, exceſſive Drinking, Dramming, Immature and Violent Venery: The remains of a Pleuriſy, Quinzy, Peripneumony &c. Hence for it's immediate cauſe, it acknowledges a too great Acrimony, Toughneſs or Thickneſs of the Blood, and indicates Cooling, Thinning, Attenuating, Sweetening and equally mixing the Fluids. Softening, Smoothing, and taking off the irritation of the Solids and Veſſels. Where the Diſeaſe is from an Acrimony in the Fluids and criſpation of the Solids, drinking and bathing in the tepid Waters is beſt; if from toughneſs, thickneſs or dryneſs of the Fluids, Chalybeates take place of all others, drunk in a proper quantity a due time, hence we cannot come at a Chalybeate of Note, but you find a multitude of Hectics, as well as gravely cured by it. *Briſtol*, *Matlock*, &c. Take place in the firſt; *Scarburgh*, *Aſtrope*, *Tuewhet* Spaw, *Benthal*, *Brockhole*, the lower, *Chorley*, *Cannock*, &c. In the laſt.

44 *Hemorrhages*, happen by the Mouth, by ſpitting or vomiting of Blood from the Noſe, or Kidneys or Bladder by Urine, from the inteſtines by Stool, from the *Uterus*, Hemorrhoids or Gums. The Diſeaſe is evident, the cauſes are either too great a redundance of Blood in the Body with a fullneſs and diſtention of the Veſſels; or

it's

it's too Watery and Thin, or too ſharp and corroſive; or ſome natural Outlets are ſuppreſſed or diminiſhed, or from hard drinking, or violent paſſions. If from too great a fullneſs of the Veſſels, and the diſcharge moderate, without any ſupervening Ulcer, the danger is ſmall if from the ſuppreſſion of ſome natural Evacuatious Chalybeat Waters with Exerciſe, to reſtore theſe ſuppreſt diſcharges, is required, If from the Thinneſs and Waterineſs of the Blood, with a Laxneſs and Weakneſs of the Solids, Chalybeates, but chiefly *Holt* takes place. If from a ſharpneſs of the Fluids, with an Abraſion or Corroſion of the Veſſels, *Matlock*, *Kirbythewer*, *Tarleton*, *Moretonſee* Pump, *Comner*, or Chalybeates which abound with Ochre, as *Malton*, *Cliff*, *Orſton* &c. Take place, but whereever the diſcharge is large, or of Continuance, *Holt* excells all.

The great Affinity between Alum and Vitriol; The ſundry ſpecies of each of theſe Salts. Our preſent inacquaintance with many of them; their being often found together, and laſtly, their poſſibility of being changed into one another, or extracted from one another, as the *Slame* in the *Alum Works*; All theſe make it no eaſy matter, to find with which of them a Mineral Water is impregnated, when *Galls* fail, and Cryſtals cannot be obtained from their Salts; Which is the caſe of *Neville Holt* Water in *Lieceſterſhire.* For *Alum* is rarely without ſome little *Vitriol*, as at *Whitby Alum Works.* As to the ſundry ſorts of each of theſe Salts; *Reinerus Solenander*, in his *Conſil: Medic:* P: 499. Says that *the three Sorts of* Alum *Deſcribed by* Dioſcorides, *and formerly uſed in Medicine*, *are not now known by Phyſicians*; *for what is uſed now is wholly factitious.* Our Author *gathered ſeveral ſorts of the Natural*, *on the* Leucogean *or* Phlegrean *Mountains of* Campania, *between* Naples and Putcoli. *The 3 ſorts formerly uſed were the* Rotundum, Sciſſile, and Liquidum; *ſome add the* Glebosum, Placites, Plinthites, Astrægaliores &c. *All which. He had often ſeen in theſe Mountains*; *and alſo the* Liquid Alum in Julæ, an Iſle of the Tyrrhenæan Sea. But the Sciſſile *is naturally the pureſt and moſt refined of all*; *tho it appear the Coarſeſt from it's Mixture of* Sulphur and ſome other Metals. Roch Alum is factitious. The other things eſteemed Alums, are of a different Nature. As the *Catinum*, ſo called from the Veſſel in which it's made or cryſtalized. The *Plummoſum*, tho taken for the

Sciſſile, yet in reality is not *Alum*, but the *Amianthus* Stone. What is called *Scaiolſæ*, tho it appear like Alum, yet it's only the Selenites of the Ancients He had ſeen other Alums which he had forgot. Now ſince there are all theſe, and may be other ſorts of Natural Alums, which we neither have, nor know their *Characteriſtics*; we cannot poſſibly ſay with any certainty, which are diſſolvable and commiſcible with common Water, and which not.

When we come to *Vitriol*, we are no leſs at a loſs; for tho we know the *mature* & *immature*, *Green*, *Blue* & *White*, yet we only know the *Characteriſtics* of the firſt, and ſome Effects of the Second and Third. But there is *Chalcitis*, *Miſi*, *Melanteria*, *Sori*, &c. We know not whither they are different Minerals, or the ſame in different degrees of Maturity. Nor do we know all the *Cadmias* of *Pliny*, *Galen*, *Dioſcorides*, *Agricola* &c. From all which Aluminous and Vitriolic Minerals, both ſeparate and mixt, *Fallopius* & *Baccius* mention many excellent Mineral Waters, that ſpring up, ſome hot, others cold, from both *Iron* and *Copper*, the firſt they call *Acidæ*, the laſt Calcanthoſæ. But whether *Neville Holt* Water, be the product of any or none of theſe. If it's evaporated in a hard Earthen or Porcellane Veſſel, on a Sand Heat, the Sediment always divides it's ſelf into three parts. 1. For about two or three Inches high on the ſides of the Veſſel (more or leſs according to the quantity of Water exhaled, and the form and largeneſs of the Veſſel) is a *Strong*, *Thick*, *Stiff*, *Glutinous Subſtance*, of the Colour of hard Glue, but *more tenacious and ſtiff*, *than Burgundy Pitch.* It ſticks ſo faſt to the Sides of the Veſſel, that they cannot be parted till it's cold; then it exactly reſembles a clear tranſparent Gum; and in ſcraping, comes off in ſmall Scales or Flakes like *Roſin* or *Francincence*; it taſtes moſt rough and Aſtringent, when poudered, it's White as Flower. If the Water is boyled in a Braſs Pan, and let ſtand all Night in it after, next Morning this Glewy part is very Green and ſo will all the future Lixiviums prepared from it be. This glutinous Matter, is the ſame as pure *Roch Alum*, when it's melted, before it's Burnt; and if it's kept Warm on the Sand Head for two or three days after the Water is evaporated; it's ſtill a ſtiff Glue. If you give it a greater Heat, then it makes the ſame Noiſe, and blebs like Alum calcining, till it's dry. 2 At the bottom of the Stone or

Porcellane Diſh, lies a dry Sediment, cruzled and White above; this is very tart, bitter, cooling, and ſomewhat Reſtringent, being chiefly Nitre, with ſome *Alum Glebe.* 3 Uunder this is a browniſh Duſt or Pouder very Salt, this is chiefly Clay and Nitre.

But none of theſe are ſo obvious when the Water is boyled away in a *Braſs*, or *Copper* Veſſel over an open Fire. For 1 The Pan is of a dirty leaden Colour, as when a *Lixivium* of *Alumſtone* is boyled in it. 2 The Sediment is gray and caked or cruzled above, but a dirty browniſh or Salt clayie like Pouder below. When the Water is boyled down, it makes a noiſe like boyling *Alum Lee.* When near evaporated, it bubbles up like a Strong Soap Lather, of a browniſh colour, makes a great Noiſe (this Heat deſtroys that Glutinouſneſs which we have from the Sand Heat) and has an Intolerable Urinous ſmell; the ſame as freſh Urine boyld near dry. If this Sediment is ſcrap'd off with an *Iron* or *Steel* Knife; Or if it's Solution in Water, or filtred *Lixivium* be ſtirred about with a Knife, it turns the Blade of a bright Red Copper colour. When the Sediment is diſſolved in diſtill'd Warm Water, the Earth often ſeparates into two different ſorts, *viz* White or Gray Flakes or Cruzzles (like *Alum Glebe*) which neither ferments with *Acids* nor *Alcalies*, and a reddiſh brown clay or pouder, which when it has parted with it's rough bitter Nitre to the Water, is quite inſipid. But the firſt parts not ſo readily with it's Salt, for when you have poured warm diſtilled Water on it ſeveral times, it ſtill retains a ſenſible rough Aluminous Taſte. An Infuſion, or Tea of Green Ragg'd Robin, or Wild Williams Purple Flowers, turns any of theſe firſt or laſt Affuſions, of a charming light Pink colour, the very ſame as Lee taken from the burnt *Alumſtone.* A little of any of theſe Affuſions mixt with freſh Urine, it quickly turns White, Muddy, Curdles and ſeparates, and lets fall a VVooly Sediment; the very ſame as *Lixivium* of *Alum.* VVas it only *Vitriol* of Iron that was in the VVater, it would turn the Braſs or Copper Veſſel black in which it boyled; or red if *Vitriol of Copper*, when the filtred ſolution is boyled up to a Lee, it turns muddy, curdles, and is of a browninſh colour, (but if boyl'd in a Braſs or Copper Veſſel, it's of a Greeniſh colour) filtre this *Lee*, it leaves a reddiſh downy rough Earth, indiſſolvible in VVater. Put freſh VVater to the filtred *Lee* and boyl it again, it ſtill turns muddy, curdles, and now leaves a white Earth; the ſame it will do if the operation is repeated ſeveral times. The Caps through which all the laſt Filtrations are made, being dried ſlowly, are of a light blue colour, ſo very friable, that the Paper may eaſily be rubb'd to Powder. Or the Paper fired, will burn with a deep blue Flame, without crackling, flying, or ſparkling. The laſt Caps have always a part of them lined with a blue dawn. If this *Lee* is very ſtrong, it will in one Night project large, regular, *Hexagonal Cryſtals of Nitre*, exactly the ſame with Dr. *Liſters Sal Calcarium*; A Solution of theſe Cryſtals in Water will coagulate *Milk*, *Serum*, *Bile &c.* Of a whitiſh colour; as tho *Roch Alum* was mixt with the Nitre. It alſo ſtrangely contracts and corrugates maſcular Fibres of Fleſh, cut length ways and put into it. Nor is this any fault in the Water (if properly uſed) which it ſelf turns the Serum like a ſmall thin Jelly; for vitriol of Iron, and all it's Chimical Product, and all the Acrid Tribe (vinegar excepted) coagulate the Animal Fluids, and corrugate the Solids; and yet they are dayly uſed in a colliquated, depauperated nay even in a ſizie ſtate of the Blood. If much ſtrong Lee is ſet by to project it's Cryſtals; and after you have, at ſeveral times, got all the Cryſtas it affords; there will remain a litttle very ſtrong browniſh or greeniſh *Lee*, which will never put out Cryſtals, but dry away to a whitiſh dawn; which is a kind of a Stiptic of *Alum*. As I ſaid before, the *Alum Glebe* in the Sediment, parts not with all it's *Alum* to the firſt, ſecond or third Affuſion of Warm VVater, of theſe after Affuſions, I gathered a large quantity, boyled them to a very ſtrong *Lee*, put it in an Earthen large white *Petty Pan* & ſet it by in a cloſe dry Room, it projected it's Nitre at ſeveral times, which I took out; at laſt it projected white clear Cryſtals of *Alum*, after two Months ſtanding, each about two Grains weight; true real Alum in perfect regular Cryſtals, as deſcribed by Dr. *Liſter*, and the ſame as I have often before got from calcined Alum Stone, but more rough and aſtringent. The *Nitre* in this VVater, is to the Alum, above fifty to one. It purges ſtrongly, (except the Body is accuſtomed to it) according to it's fixt parts. For, in the drought of 1738, each Ale pint of VVater, left 90 Grains of Sediment. During the great Rains in the latter end of *November* and beginning of *December* 1739. Each Ale pint of it boyled away quickly in a Braſs pan over an open Fire, left on y Sixty Grains of Sediment. But an Ale pint of it evaporated in a Glaſs Veſſel on a Sand heat, left 74 Grs. It's from this large quantity of rough bitter Salt, that it proves ſometimes nauſeous to the Stomach, of ſome delicate Conſtitutions, as Ladies and Children. All other briny Waters have the like Effect on ſuch drinkers, as *Harrigate*, *Stanger*, *Weatherſlack*, *Cartmal*, *Sea Water* &c. Eſpecially ſuch as have Alum or Vitriol in them. I made ſome Tryals on the famous *Holt* Waters in the South, and compared them with our *Neville Holt*. The laſt turns always a Blueiſh Leaden Colour with *Galls*, except immediately after great Rains then it is Purpliſh. The firſt, the Revd. Mr. *Lewis* ſays, ſometimes tinge Purple with *Galls*, other times not at all; therefore can have no Stipticity, but when rhey have that ferruginous Principle, which gives the Purple Colour. From a Gallon and a half of the firſt *Holt* Mr. Lewis got about three drams and a half of Sediment. But in Summer 1734. I obtained 4 Scruples & 14 Grains from 2 Quarts of it. And in Summer 1737, by evaporating Two Quarts of *Old Holt* Spaw, on a Sand Heat, I had 2 Drams of Sediment, white as Snow. From 2 Quarts of *New Holt* Spaw, I had 7 Scrudles; the Salt of *Old Holt* Water, was one part Nitre, and five parts Marine, the Salt of New *Holt*, is all Marine only; the Earth is whitiſh, highly alcaline, and inſipid, like Calis Sand. So that theſe Holts (whoſe Salt are to each other as 63 to 31) agree with our *Neville Holt*, in no one principle except the common Vehicle, which is the ſame in all Waters whatever. For that our *Holt* contains, *Nitre*, *Alum*, *Sulphur*, *Alum Glebe*. & a *Neutral Earth*, has been fully demonſtrated; and may perhaps have other Principles which are not yet diſcovered; but no Marine Salt. On the ſummit of the Hill about the Spaw, the Oaks are thick ſhort & very broad ſpread, not unlike thoſe on the *Alum Mines* about *Whitby*.

This Water ſhould be drunk in different Doſes according to the various Intentions; for where deterging bracing and invigorating emaciated atrophic Bodies, is only deſigned, a leſſer Doſe, as from half a Pint, to a Pint and half is ſufficient. But where evacuating, drying up and healing is intended, from a Pint to five half Pints, is required. But where it affects the Stomach, a leſs Doſe will do, till it be accuſtomed to it. And it's not a little ſurprizing, that tho' this Water be ſo aſtringent; yet I have ſo many inſtances conſiſtent with my own knowledge, as fully convince me, that they neither obſtruct, leſſen nor retard the Catameniæ, but rather promote and encreaſe them. I have in the *Natural Hiſtory* given a Catalogue of ſome of thoſe Diſtempers, which this Water has cured. But moſt remarkable was the expreſſion of one, who moſt part of his Life, had been a miſerable ſufferer by the Stone, who meeting one Day with a worthy Gentleman near the Spaw, who asked him why he drunk the Waters; anſwered that He could compare his Back to nothing but a Brick-wall, which the Waters had broke to pieces and brought away by Urine. That he had not been able to walk up right, for ſome Years, till he had the Good Luck to try them out of meer Curioſity, but found ſo much eaſe by them, that his Life which had heretofore been a Burden to him, was now not only eaſy but comfortable. This was in 1731, and the Perſon has ever ſince enjoyed a tolerable good ſtate of Health. The Water is ſo Sovereign a Stomachic, a Perſon of Quality finding that Effect, from his own uſe of it, ſaid he would forbid any of his Family Drinking it, leſt they ſhould Eat him out of Houſe and Home. Terrible was the Caſe of the miſerable pocky Wretch who came hither from the Borders of *Wales*, after he had taken a multitude of Medicines, had endured ſevere Salivations, was brought very weak, and as the vulgar ſtiled him, half rotten, yet by the uſe of theſe Waters, was perfectly reſtored. Rheumatiſms have been intirely eradicated by a moderate uſe of them, in a few Weeks. Nor muſt I omit the Atteſtation of Mr. *Gyles Garter Poulton* of *Desborough Northamptonſhire*, left under his own Hand. He had been afflicted with a moſt violent Scorbutic Humour, for four Years together; it was apprehended to be a *Lœpra Grœcortun*; He had conſulted ſeveral Eminent Phyſicians, and exactly purſued many of their Courſes; but this Diſtemper was as obſtinate as ever. But by the Advice of the ingenious Dr. *Farrer* of *Harborough*, He applied to the uſe of *Nevelle Holt* Water, and when he had drunk of it fifteen Days he was perfectly Cured. This was ſeveral Years ago, and he had no occaſion to repeat his Viſit. Of this ſort was that Leproſy on the Woman mentioned before, cured laſt Summer there. It's obſervable that in Mr. *Poultons* Caſe was a particular Circumſtance which forbid him the drinking of the Water till after Dinner. It would be Injuſtice to the Publick, to overlook the miſerable Caſe of *John Settle* of *Sheffield*, aged about Eighteen Years; who went there in *Septr*: 1739 a loathſome miſerable

Carrion, Pale, Meagre and Hectic, muffled up both Hands, Face, and Neck, running Sores in the Kings Evil, which he had had ſome Years. The lateneſs of the Seaſon allowed him only a ſeven Week ſtay; he returned with a healthy, ſtrong, vigorous Conſtitution, and florid pleaſant Look. Let theſe Inſtances ſerve at this time; for it would be endleſs to enter into a Detail of the great Numbers Cured in the Diſeaſes mentioned in the Natural Hiſtory. It's uſe is a ſpeedy Cure in freſh Wounds; and quickly dries up the ſpongy proud Fleſh in old Wounds. But what is really ſurprizing, it's giving Relief in contracted Sinews, by meer drinking. In that diſtemper of cattle called *Staleing of Blood*, and in their *Diarrhæa*, call'd the *Shitters*, a Gallon of the Water given by way of drench, preſently purges them, and cures both theſe diſeaſes quickly. People uſually drink a Quart in a Morning, which rarely fails to give 4 5 or 6 Stools in a very ſhort time and ſeldom Gripes after the firſt Stool, the Colour whereof is moſtly very Black. It works ſenſibly by Urine, ſometimes by ſweat; and at firſt, ſome few delicate perſons it vomits, Moſt of thoſe that drink it, cannot abide any ſort of Liquor for ſome time after it.

For moſt of theſe Obſervations, and a great many others which I have not room to inſert, the World is obliged to my ingenious and worthy Friend, Mr. *Richard Levinge* in *Holt*; who was preſent at the digging and making of the Spaw, has as carefully attended to and obſerved the effects of the Waters, as his Gouty conſtitution would allow, and has ſincerely and vigorouſly ſought the Relief of the afflicted, by promoting and encouraging this work as much as his often bad ſtate of Health would allow.

But come we to ſome of thoſe diſtempers, which, from it's principles ſeem to be the more chief and primary Intentions of this Water. *Ichley*, *Willowbridge*, and ſeveral other like Waters in *England*, have heretofore been deemed Specifics, becauſe they cured more ulcerated Patients, than the Medical or Chirurgical Art could pretend to. And becauſe no more effectual Waters were known; whither the Ulcers were ſeated externally on the *Glands, Muſcles* or *Mermbanes*, tho' theſe Waters contain no fixt parts beyond common Water; and no Veſtigable Volatile Mineral principles. Therefore they rather ſeem to give us a ſpecimen of the wonderfull Effects of *Cold Bathing*, *Moffat* Sulphur Water has deſervedly born the greateſt Repute the laſt Eighty Years; and might ſtill be of greater ſervice and extenſive uſe, were there a convenient cold Bath made, with two Rooms for the ſundry Sexes to dreſs and undreſs in. No place has better convenience for ſuch a Bath, than there near the Well, either of common cold Water, all the Ground on the S. E. ſide of it, being full of quick Springs. And on the other ſide of the brook oppoſite to the ſpaw, ouzes out of the Rock a ſmall dribling Spring of the ſame Sulphur Water. One Bath of this, and another of common Water, would make that place a perpetual Yearly Reſort, and add much to the extenſive uſe and ſucceſs of the Waters, even to the Conviction of the Admirers of it's late pitiful Rivals. But whatever any of theſe Waters, or Limeſtone or Sulphur, or Chalybeate Ferruginous Waters, can do in a whole Summer Seaſon, in the *King's evil*, *Leproſy*, *Wet or Dry Scab*, &c. *Neville Holt* will do in a Month or Six Weeks at moſt; and will make a perfect cure in caſes where the other cannot. And as to a *Diabetes*, whatever ſucceſs *Briſtol* or *Matlock* may produce in Six Months uſe of their Water *Neville Holt* Water will do in one. And for overflowing of the *Menſes*, *Fluor Albus*, *Bloody Flux*, *Spitting of Blood*, Bleeding *Piles*, *Fiſtula*, *Sinuous Ulcers*, *Seminal Gleets*, *Ulcers of the Lungs* without, or even with a ſmall Fever &c. Or in one word, in theſe Diſeaſes which come from a Relaxation of the Solids, or from a breach of the Veſſels, or Ulcerous, or other unhealthy and exceſſive diſcharges of the Animal Juyces, whither externally or internally; without all peradventure it has no equal or Rival in Britain, yet known, and may in theſe caſes be depended on beyond Expectation. I cannot here overlook *Cheltenham* Water, the firſt and chief Nitrous Purging Water in *England*, It's fitneſs and uſefulneſs in the *Scurvy*, *Rheumatiſm*, palled *Appetite*, *and weak Digeſtion*, *Cacochymi*, *Leucophlegmatia*, *Anaſarca*, *Cachexy*, *Heat and habitual Coſtiveneſs*; fixt Chronic *pains of the Hips and Loins*, (If not from a *Tabes Dorſalis*) *and Gout in Young People* not hereditary. *Outward Sordid naſty Ulcers*; tho it cures not the laſt near ſo ſoon as *Neville Holt Water*. *Hartlepool Water* chalenges alſo our great Regard from the Volatility and Penetration of it's Principles, being thereby ſo well adapted to internal *Scurbutic Diſorders*, habitual

Bilious Colicks, Pains and Obſtructions of the Bowels, Weakneſs of the Back, Pains, Hyppo. Hyſterics, Pain of the Stomach and Indigeſtion, depraved or obſtructed Menſes, Hectical Heats, gentle recent Ulcers, Diſorders of the Breaſt &c.

Thus we ſee Mineral Waters act on both Solids and Fluids. On the firſt. 1 By irritation and ſtimulation, and ſo encreaſing their vibrations or actions. 2 By contracting in making them thick or ſhorter or both. 3 By relaxing, thinning, widening and making them more flexible. 4 By agglutinating, healing and ſhutting up the excoriated Mouths of the capillary Veſſels, as in Hemorrhages Ulcers *&c.* Whether internal or external. They act on the Fluids. 1 By diluting, attenuating and rarefying i: e: by encreaſing the Bulk, but diminiſhing the largeneſs of the Blood Globules. 2 By thickening i: e: encreaſing the largeneſs of the Globules, but diminiſhing it's Bulk. 3 By making Blood milder, either by abſorbing or expelling it's Salts, or rancid Oyl or 4 by rendering it ſharper, in expelling ſome of it's ſuperfluous watery or flegmatic parts, and pouring into it neceſſary Salts. 5. By making it's parts leſs coherent, or attractive, whether viſcid or earthy quality be predominant. 6. Or by encreaſing their attractive and coheſive Quality, in leſſening it's ſeroſity, or removing it's broken Craſis. 7. By quickening it's motion in lax Veſſels, and leſſening it's motion in a too Elaſtic Tube. Or 8 Encreaſing it's quantity, by ſtopping unnatural, or diminiſhing, exceſſive or natural Diſcharges; or leſſening it's motion, by opening or enlarging, obſtructed or diminiſhed Outlets.

As at the Springs I took particular care, by ſtrict enquiry, to find out thoſe Diſeaſes, in which each had been found moſt ſucceſsfull, with the Symptoms that attended it, and in what conſtitutions; and withall to diſcover theſe caſes and ſymptoms, wherein they had either fail'd or done hurt, together with the manner of the Patients uſe of the Waters and Non naturals. So in this practical part, I had a particular Eye to theſe Hiſtories, that our reaſoning being both *A poſteriori, et Priori,* might have all the Strength of a mortal probability, if not of a demonſtration, that the benevolent, but eſpecially the afflicted part of Mankind, might have the greater certainty and ſatisfaction. And by comparing our whole Hiſtories together, I was ſurprized to find the harmonious Effects of different Waters of the ſame claſs, in the like Diſeaſes and Conſtitutions, only allowing for the more ſlow, or ſpeedy ſucceſs, as the Waters were either more richly, or poorly, impregnated with the ſame Principle, or as they contained more or leſs of the Volatile parts; and I always found their good Effects greateſt, and ſooneſt, when drunk freely, as they do abroad, and was formerly done in *England*; a ſcantling of Water drunk, as 2 or 3 half Pints, to ſtrong Conſtitutions, in a Morning, being only a meer Amuſement. And I will venture to ſay, that when this Mechanical Philoſophy prevails with the Drinkers, they muſt attend 7 Months for the ſame Benefit from plain Sulphur and Chalybeate Waters eſpecially, that others reap in one, from more liberal Draughts; of this I had ſufficient proof. at *Moffat*, *Aſtrope*. *Wardrew*, *Stanger*, and other Places; but here I muſt except hot Waters, for ſuch large Doſes would quickly make mad work; as alſo ſtrong purgative Waters in weak Conſtitutions, or very ſtrong Chalybeates in Plethoric and Sanguineous People; or any Water containing much Calcarious Earth in Nephritics; or a large Quantity of Water ſwill'd down by Hydropics, or ſuch as have very lax Fibres, or very watery Juyces. Or any ſtrong Sulphur Waters in continual hectical peripneumonic Fevers, and Cough without an open Ulcer, in the firſt Caſe, they are certainly fatal; but with Ulcers they have done wonders, and raiſed up beyond all credibility. The free uſe of ſtrong Chalybeates in too rapid a Motion of the Blood and fullneſs of the Veſſels, without great obſtructions, before Bleeding and Evacuation, may endanger a Fever or Breach of the Veſſels, and ſo be hazardous.

Let us obſerve that one and the ſame cauſe produces many and various diſorders; and that the ſame Diſeaſe in ſeveral Perſons, as it ariſes from different cauſes, requires the uſe of different Waters, therefore neither can one Water cure the ſame Diſeaſe in all Conſtitutions; nor ſhould each Water be extolled as an univerſal Remedy; which has often been a fault in Writers on this Subject.

Having in this part, had frequent occaſion to mention, Ochry and Calcarious Waters, or ſuch as contain much Ironſtone, or Limeſtone, or Alcaline Earth, or Waters impregnated with, Nitre, Vitriol, Alum or Marine Salt, which theſe Springs are, may be ſeen in *Tab.*

4

4: Col: 4 5 6 and laſt, without Repetion here. It remains for us only to give a bare Liſt. 1 Of plain Chalybeates, according to the Volatility and Richneſs of their ferruginous Spirits ſince the more of this Spirit, the lighter they ſit on the Stomach, and go ſooner out of the Body, increaſing ſtrength, ſpirits, and appetite proportionably. A A denotes the beſt or chief of that claſs which we have examined in both Vol: S: A: the Second Rank. B: the Third &c.

Tuewhet Spaw, *Benthal*, *Aſtrope*, *Stockbond* A A Doſe from two Pints to four or five *Wellingburrow*, *Ilmington*, *Newnham Regis*, *Knowſley*, *Latham*, *Moſshouſe*, *Fullwood*, *Quarndun*, *Guilethwait or Gillfoot*, *Carleton on Trent.* *A Doſe lbii to lbv or Pints* *Broomleſs Moor*, *Wirksworth fine Chalybeat*, *Wittering*, *Cannock*, *Bournley*, *Lancaſter*, *Brimingham*, *Dinningtou*, *Netherbrockhole*, *Congleton*, *Malvern*, *Coventry Park Well*, *Acworth*, *Burleigh Exeter*, *Grantham*, *Ablede*, *Hemſworth*, *Sephton*, *B. Doſe two Pints to three*, *Harrigate ſweet Spaw*, *Darfield*, *Burgh*, *Beighton*, *Inglewhite*, *Northampton*, *Wigton*, *Carſlile*. *Doſe a Pint and a half to three.* *Buxton Chalybeate*, *Wirksworth Town Chalybeate*, *Dofield*, *Durham*, *Wiſſingham*, *Lanſhaw bridge*, *Millars Spaw Stockport*, *Oxford new Well*, *Cheſterfield*, *Whittington*, *high Cropton*, *Black Park*, *D Doſe from a Pint to three.*

Purging and Laxative Chalybeates, according to their Purging Strength. Are *Cheltenham*, *Scarburg*, both Wells, *Weatherſlack*, *Stanger* A A Doſe from a Pint to four. *Stenfield*, *Malton*, *Aſwarby*, *Kings cliff*, *Tarleton*, *Kirby thewers* both, A: Doſe from a Pint and a half, to four Pints. *Orſton*, *Hartlepool*, *Derby*, *Thursk* *Walcote*, *Ansby*, *Cawthorp*, B Doſe from two Pints to three, *Binley* *Tibſhelf*, E *Farndon*, F Doſe from two Pints to five.

Waters impregnated meerly by a Volatile Sulphur, their different Strength is, *Moffat*, *Wigglesworth*, *Keddleſton*, *Wirkſworth*, A A Doſe from lbii to lbv *Upper Normandy*, *Cunleyhouſe*, *Skipton*, *Durham*, *Wardrew*, *Askeron*, *Codsalwood*, *Loanſburrow*, *Storra*, *Bilton*, A Doſe from lbii to lbv *Lockwood*, *Glaſsel hall*, *Mellarby*, *Whaley*, *Iuglewhite*, *Shuttlewood*, *Cunley*, *Clethrow*, *Deddington*, B. Doſe lbii to lbiv *Willenhall*, *Bandwell*, *Leeds*, *Catcliff* P Doſe from lbii to iv or v Both Purging Chalybeates, and Sulphur Waters move the Belly, in proportion to their contain'd Salts which ſee in Table Fourth.

I ſhall next briefly conſider *Cold Bathing* in common Water; the Theory whereof has been eſtabliſhed by *Bellini*; borrowed and improved by Dr. *Wainwright*, trans-ſcribed by *Quincy*, and from them taken by *Burton* in his Non-naturals. The practice of it has been revived, with inexpreſſible Benefit to Mankind, by *Sir John Floyer*, Dr. *Bernard*, and Dr. *Brown*, Sir *John* has abundantly ſhown, and proved the *Antiquity* of *Medicinal*; as well as *Religious* Bathing, and the univerſal uſe of it, by all Nations and Religions; till a Monkiſh Philoſophy prevailed in the Weſtern World, which took away one of the Leg's of Phyſick, *viz Exerciſe and Cold Bathing*, and in their Room ſubſtituted *Incantations, Spells and Charms* &c. When Natural Warm Baths came in uſe; this practiſe was attended with ſo many *Doubts* and *Queries*, as clogg'd, and render'd it difficult. whether the Bath at that time might not be under the *Male Volent Aſpect* of ſome Star? Whether it was ſafe in *Leap Year*? or at the Appearance of *Meteors*? or in time of Famine or Peſtilence? or in a Year when there happened to be ſeveral *Earthquakes*; whither ſome *Venemous Effluria* might not that Year ariſe from the Earth, and render them noxious? &c. But I ſhall confine my Inquiries to narrower Bounds, as in what *Diſeaſes* & *Conſtitutions Cold Bathing* is profitable, or hurtfull, whither *exceſſive Rains*, *Great Floods*, *irruptions of freſh Water*, or leſſening of *Mineral Principles*, as well for outward as inward uſe, or if it be ſafe to go into an uncovered Bath in ſtormy Winds; or if the Soil is low and marſhy &c. Both which laſt I think ſhould be avoided, when we can be accomodated with other Waters of the ſame ſort, without theſe Inconveniences. But firſt as to Bathing in common Water by way of Caveat, I judge it improper on a full Stomach of either Meat or Drink, or both; the ſame it is after much Exerciſe, or when the Body is hot; nor is it ſafe to ſuch as make Bloody Urine; or Vomit Blood; or have any inward *Impoſtum*; or have unſound *Viſcera*; nor is it adviſable to Weak, Faint, or Feveriſh People, nor to ſuch whoſe Neceſſity obliges them to feed on Thin, Poor diet, nor after long Faſting or Abſtinence, nor to too thin, naturally Lean and Meagre Perſons; nor during a fit of the *Gout* or *Colick*; nor in any Inflammation of the *Lungs* or *Breaſt*; nor to thoſe Labouring under Defluxions or Catarrh's; or in any caſe wherein recovery depends upon eaſy or free Spitting; nor to too monſtruouſly over ſwelled *Hydropic*, *Leucophlegmatic* or *Corpulent* Bodies; nor are Perſons unaccuſtomed to Bathing unneceſſarily to adventure on it, except from *May* to *September*. But People of ſtrong Conſtitutions, or that have been accuſtomed to it may bath in the Houſe at any time of the Year, but *Bathing* ſhould not be begun till the Body is cleanſed from groſs Excrements or Humours by a Vomit, and a mild Purge or two; and if there happen to be any Obſtructions in the *Uropeia*, theſe ſhould either be removed, or the parts relaxed and dilated by an opiate after Evacuation. For cold Bathing braces and thins the Skin, but hardens the Belly. If the Body is too full of Blood, and the Veſſels weak, Bleeding will be proper to prevent any *Hemorrhage*. Theſe previous Evacuations are more neceſſary for Bathing, than drinking, for in the laſt, either the Bulk and weight of the Water, or it's irritating Salts, are apt to move the Belly, clear the firſt paſſages, and encreaſe Urine, at leaſt the Water drunk, going into the Body, and mixing with the Blood, thins and fits it for the Kidneys, but in Bathing we ſhall find that the thinner parts are ſtrained off, with a very inconſiderable Addition made to the thicker.

For the time we ſtay in the cold Bath, it muſt not be till the Body, is chill'd and begin to be ſtiff, half an Hour in River Water in Summer is ſufficient, two or three Minutes in a cold Bath, except they have Room to uſe Exerciſe. Let the Bather begin at once a day if he is of a ſtrong Conſtitution and can bear it, he may after the firſt three or four days venture twice a day, Morning and Evening upon an empty Stomach. And by cloſe Attention to the Effects, it may ſoon be determined whether cold Bathing will be helpfull or hurtfull on a fair Trial, or if he continues long Chill and cold after he comes out, if his countenance is Paler, his Appetite worſe, his Sleep leſs, or more diſturbed, if he is Duller, Sleepier, Drowſier, and Unfitter for Buſineſs, or Study, if a Numbneſs, Whiteneſs, or want of feeling or motion, Sieze any of the Parts, as Fingers, Toes, Hands or Feet, after ſeveral Tryals in different degrees of Coldneſs, it's time to deſiſt. I have often obſerved that Bathing in warm River

Water in the heat of Summer, has had all theſe Effects, and yet the cold *Bath* has agreed exceeding well, and anſwered the *Bathers* Expectation. But if the cold *Bath* is, or will prove beneficial, theſe Signs will attend the uſe of it. 1 The *Bather feels a pleaſant warmth* diffuſe it's ſelf all over the ſurface, after he has dried his Skin. 2 And with that warmth, the *Face and all the Body is Ruddy* and *Lively*, 3 He is much more *Brisk and Cheerful.* 4 Feels himſelf *Lighter, Freſher, and Nimbler.* 5 Has a better *Appetite* and *leſs Thirſt.* 6 *He Sleeps and Performs all the Actions of Life, with more Eaſe and Pleaſure.*

The Diſeaſes in which cold Bathing has been found moſt ſucceſsful have, after fair Tryal, been carefully collected by Sir *John Floyer*, Dr. *Barnard*, and the ingenious Mr. *John King of Bungey*, and they have found it profitable in moſt Diſeaſes, of the Head, as *Headach, Lethargy, Palſy, Convulſions, Madneſs, Bite of a Mad Dog, Tremors. Shakings, Numbneſs, Atrophics, weak Nerves, bad Stamina.* Moſt *Exquiſite pains with univerſal Contractions and hardneſs of the Muſcles, with pining of the part. Intolerable wandring, arthritic Pains with Palſy and Cramps. Fatal Convalſions* prevented in Children. *Burning Fevers with Convulſions, Ravings, and Dilirium. Malignant Fevers, Plague, Fever* begining with Heat and Thirſt. Some kinds of *Small-pox*, Tho' *Bathing* may have ſometimes been found uſefull in the laſt five caſes, yet was it uſed without any Advice, but only by the patient's Ignorance, or in a Raving fit, and ſo we would not by any means recommend it for imitation, it can only be called mad practice, but happened luckily) Obſtinate and Chronic *Agues*, Knotty *Gout, Siatica, Rheumatic Pains, Habitual Thirſt, Shortneſs of Breath, Coughs, Conſumptions, ſcorbutic pains*,-- fixt or wandering; *Colds, Speech loſt, Deafneſs, Toothach, Pains of the Muſcles of the Neck with a Diſtortion of the Back, Sides, or Shoulders, loſt Erection of the Penis, Relaxation of the Cremaſter Muſcles of the Teſticles, Abortion and Overflowing of the Menſes to prevent Fluor albus, weak and benumbed Joynts, Dropſies, Itch,* tho' the whole Skin be almoſt covered with Boyls. *Old Gleets, Habitual Colick, with Pineing and Inexpreſſible pain. Hemiphlegia with Convulſions; Swell'd Legs, Wandering Pains; Worms, Relaxation and Obſtructions of the Nerves, Spaſms and Wrenches, Hyppo,* *Hyſterics*, *Rickets*, *Lameneſs even to a Depravation* of both Uſe & Senſe of the parts, to prevent catching frequent colds and ſtrengthen the Body; for *Stone*, *Gravel* or *Sand*, *Obſtructions in the Liver Spleen*, *Sweetbread*, *Jaundice*, *Gripes*, *Excoriations of the Body*, *Pain and Weakneſs of the* Stomach, *Indigeſtion*; *want of Appetite*, *Vomiting*, *Faint or clammy Sweats*, *Inflammed Watery or Bleared Eyes*, *Bleeding at the Noſe.* St. *Vitus's Dance*; with ſeveral other Diſorders.

Of ſeveral Hundreds of *ſurprizing unexpected cures* done by the *cold Bath.* I ſhall beg leave to mention only one, which is the caſe of Mr. *Tho' Baker* Junior of *Litton* near *Tiddes Well* in *Derbyſhire* who ſent it me Written with his own Hand in 1716 being playing at Foot ball, as he was running he ſet his Foot in a hollow place, which giving his Body a ſudden Shock, he found he had hurt his left ſide under the ſhort Ribs at every Step ſomething prick'd that ſide. In a little time his Grief ſpread upwards, and downwards to his Thigh, the Skin being grown dull and almoſt ſenſleſs. Six Years after that, as he was walking over the Houſe Floor, by making ſuch another falſe Step, the ſame pain as above, ſiezed him in his left Breaſt. He then applied to an ingenious Apothecary, who told him the caſe was deſperate, for he had broke one of the ſtrongeſt Nerves which could never be reunited again, now he was laid wholly aſide from Buſſineſs, and ſent for another practitioner who ordered him to *Buxton* & *Matlock* but theſe did nothing for him, In a Year and a half after he loſt his Speech, his pain being ſo intolerable, he could not bear moving theſe Organs, nor could he eat, or move his Head any way, but when ſet down or laid, was forced to continue immovable like a Logg; his firſt Doctor being ſent for, ſaid he could not poſſibly live a Week. It being now upwards of two Years ſince the laſt accident. The Spring following he was confined cloſe to Bed, and after Twelve Weeks lying, he was at all adventures taken up, then he found his Illneſs got into his right ſide. When he was taken of Reading; not that he had any failure of his Sight, but moving his *Eyes* from one Line to another of the Book, his pain was quite rageous. Now he firſt perceived ſomewhat more acroſs his Body in a ſtiff ſlow manner, as if it crept from his left Armpit to his Right, juſt under the Skin, and he had a hard ſcurff on the *Sternum*, or Breaſt bone, ſo painfull, that he could not endure the touch of a dawn Feather In this languiſhing deplorable condition he laid till Chriſtmaſs 1728 that I was ſent for. I found him emaciated to a *Sceleton*, his *Sternum*, but eſpecially the *Pit of the Stomach was covered with brown hard, fœtid thick cruſt, his Breath Stunk intolerably, the Tongue White, Belly exceedingly Coſtive,* Seldom a Motion to Stool once in a Week; The *Skin round the Body was all Numb*, except a little piece on the Right ſide of the Back Bone; *Pulſe very little Feveriſh*, one could not hear him ſpeak till the Ear was laid to his Mouth, moſt of his Nouriſhments was Liquids Suck'd through a Quill as he laid on his Back. The Motion round his Body was like Liquor Struggling for a vent, moving from his left ſide to his right. Before he was confined to Bed, when he Sat ſtill without leaſt Motion, he would often ſhow his Wife and Relations the Skin of his Body move from left to right If he walk'd or uſed any Motion more than ordinary, this Symptom would ceaſe; but it returned again with greater violence after. Comparing the whole *Symptoms* and *Duration* of the Diſeaſe together, they ſeemed to be the Effect of an *Alcaline Acrimony*; The uſe of *Glyſters* was wholly impracticable, therefore I order'd very gentle, cooling, diluting lenitives a little acidulated; a moſt emolient anodye Fomentation to the Breaſt, with a Liniment to the ſame purpoſe after it, a decoction of the woods acidulated for common Drink. Three Weeks after I viſited him again; but could perceive no ſenſible Advantage from that Method I then preſcribed a ſtrong Liniment of *Ung: Dialth* with *Ol: Vitriol:* outwardly, and *Spt Vitriol* given in Water inwardly, and all his Food highly acidulated. In few days he found relief from this, was able to read, ſpeak ſoftly, move his Head and Jaws, get out of Bed, and walk over his Houſe Twenty times in a Day. This Method he uſed Eight Weeks, during which time he never put off a Shirt to put it on again, for all the Breaſt and Boſom was eaten out and gone, as this ſcurff looſened the pain abated. At the latter end of *May* he tried to ride out, and during the Motion of the Horſe the pain was eaſieſt; but returned again, the inſtant he ſtood ſtill, in *June* he was carried two little Miles off to an intenſly cold brook of charming bright Water called *Creſsbrook*, here he was Bath'd dayly for three Weeks, and found much ſervice by it, tho' not without frequent Relapſes of Pain. He deſiſted bathing ſome time, till I heard of it, I ordered him dayly to it, which he did all Summer, and every other Day all Winter, except when Froſt and Snow hindered him, then he Bathed in a Well at Home. In *Febr*: he went to *Matlock*, but got no Benefit at all there When he went in and came out he found his Skin all over full of hard Knots, but Bathing in *Bright pool Creſsbrook* took away theſe Knots, which returned not again for Twenty 4 Hours after. After a Month's ſtay at *Matlock* he returned to his own cold Bath (whoſe degree of cold ſee in the Table) as ſpring came on he ſtill grew better, now could ſpeak aloud. Three Weeks after *Midſummer* he began to work at his Trade (a Stocking Weaver) he kept Bathing all that Summer and next Winter, but turned negligent the Summer after, *viz* in 1731, on which he had a ſmall relapſe, but was ſoon carried off by the cold Bath; this courſe he continued next Winter and Summer, followed his Buſſineſs carefully, and was able to provide well for his Family. Every Summer before he bath'd he uſed to ſweat exceſſively but chiefly the Breaſt, pour'd out a clammy ſweat like Oyl, but inſtead of that, after the cold Bath, he had only a kindly Natural Heat. The firſt Winter he bathed, when he rubb'd his Skin to dry it, there always came off a thin Scurf or Fleece all over the Body. He has now continued well for ſeveral Years.

But how theſe wonderful, and ſome of them ſeemingly contradictory cures, are brought about by cold Bathing, we find ſufficiently accounted for by the Above Authors, who ſuppoſing the Bodies whole ſurface equal to fifteen Feet, which being immerſed two foot under Water, ſubtains a weight added to that of the Air, equal to 2280lb whoſe Effects will be, 1 A greater preſſure upon the Body, whoſe Surface is firſt and moſt compreſſed, and it's centre leaſt and laſt. 2 Stimulation and Contraction of the Solids from it's Coldneſs. Inferr 1 Since the preſſure of the Water added to that of the Air, is ſo great on the ſurface of the Body, and the leaſt on the Centre and Viſcera, the Blood Veſſels on the outſide of the Body being compreſt by the weight, and contracted by the cold, the Blood will be thrown upon the Viſcera, where there is no increaſe of Reſiſtance; the Effect of which will be, to attenuate, break and diſſolve the Stagnant Humours, by ſtraitening, compreſſing and ſqueezing the Veſſels, whereby Motion will be reſtored to ſuch as had loſt it, make it brisker and freer to ſuch as had it. 2 Hereby all the Glandular Secretions will be enlarged, Bile, Urine, Perſpiration &c. 3 From the Increaſe of Secretion, and Bracing of the Solids, the Body will feel lighter and warmer. 4 From this increaſed preſſure on the Body, the diſtended Lymphatics will return their Lympha in a larger quantity, and in leſs given time to the Kidneys, to be filtred and ſtrained off by Urine, in that ſwelling over all the Surface of the Body call'd *Anaſarca.* And likewiſe in that Dropſy of the Belly call'd *Aſcites*, that Lymph or Serum, which is Spued out of the Mouths of the broken Lymphatics, into the Cavity of the Bely, which in the Bath being more compreſs'd, the Lymph muſt be forcibly driven into it's abſorbent Veſſels; which tho Anatomiſts have not diſcovered, yet from ſundry Obſervations, we are ſatisfied of their Exiſtence, as from the continual Steam that riſes from all the Bowels of the Breaſt and Belly, which would ſoon diſtend them, were there no ſuch Veſſels to receive it. And alſo from the ſudden and wonderful, Relief People in the like caſe, have found from cold Bathing, therefore a collection of Water in the Belly, ſeems to be not ſo much from want of thoſe Veſſels. as either from their Flaccidity, or the Stagnant Waters Viſcidity. 5 The coldneſs of the Water is one cauſe of it's Effects; for it's certain that all cold contracts; which contraction will be in proportion. 1 To the degree of coldneſs, hence the coldeſt Water is found the moſt Efficacious in a great many Stubborn caſes. 2 The ſuddenneſs of the Application of the cold to the Body; hence jumping in all at once, gives a greater contraction, then going in leaſurely or by piecemeal. By this ſudden immerſion the contraction is inſtantly propogated through the whole Syſtem, whereby the Humours are propell'd with greater force, through the Veſſels, the Fibres and Veſſels being at the ſame time more Tenſe and Strong, will act with greater Force driving forward their contents with a quicker Motion, and break them more powerfully and irreſiſtibly. 6 When the Mercury Stands higheſt in the Barometer, our Body (ſuppoſing it's Area to be Fifteen feet) ſuſtains a preſſure of the Air equal to 39900lb Weight, and when the Mercury falls loweſt, the Weight of Air on the Bodies ſurface, exceeds not 36000lb Weight, then the odds is near 4000l, enough to make a very great difference and ſenſible Alteration, in the Circulation of the Animal Juyces on the Bodies ſurface. 7 Since a Body immerſed two Foot deep in common Water, Suſtains a Weight equal to 2280lb added to that of the Air, then when the Mercury is at 28 or a little lower, the ſame Body immerſed three foot and a half deep in common Water, ſuſtains only a weight very near equal to that of the Air, when the Mercury ſtands at 31ſt or higheſt in the Barometer Hence appears the uſefullneſs of the cold Bath in moiſt, wet, foggy, heavy, cloudy Weather, when the Mercury is very low, to brace the Body, forward perſpiration and the Animal Secretions; eſpecially of Nervous Juyce to cheer, enliven and rouze the Body. 2 From this diminution of the preſſure by the Atmoſphere, it is, that in rainy foggy or miſling Weather, we find our ſelves ſo dull ſleepy and inactive, the mind alſo confuſed ſlow and cloudy our moſt intenſe thoughts are often ſhallow and inconnected, all which may be preſently diſpers'd by cold bathing, for Reaſons above,

Since there is ſo great a difference of the preſſure of the Air at ſundry times, *viz* 4000lb weight, or near a 10th part, the Effects of it on tender Bodies muſt be very ſenſible, for when the Barometer is at loweſt, from this diminution of Compreſſion, the Veſſels on the Surface and Extreams of their Bodies, which have received any Hurt and Diſtention, and either cannot, or have not recovered their Tone, will be diſtended a freſh, hence ſome Feelings or Grudgings of the old Complaint; If ſuch would live comfortably, they ſhould not at ſuch times and under ſuch circumſtances, neglect the uſe of the cold Bath, to compenſate the weight of preſſure in the Air, and contraction of the Veſſels, and propulſions of the Fluids to the Bodies Centre. On the contrary, when the Mercury ſtands higheſt and the Body moſt compreſt; or when the Body and Veſſels are fulleſt of Blood. In the firſt caſe a great Quantity of the Blood will lie in the Viſcera, therefore ſuch as have weak, too much dilated, or obſtructed Veſſels, the Diſorders will be felt more inward, and the cold Bath is then highly improper. Again where the variation of the Mercury is leaſt, there will happen the feweſt of theſe complaints on any change of weather; as near the Equator where it varies little; and eighty Degrees or above from the Equator, the Barometer varies not above half an Inch: Heat, or very hot, clear, or ſultry Weather in Summer, has near the ſame Effect on our Bodies, as moiſt, foggy or rainy Weather, even tho the Mercury ſtands pretty high in the Glaſs, for Heat relaxes the Solids of the whole Syſtem; the Animal juyces are rarefied, the Body is dull, lazy, ſluggiſh, and covered with fainty ſweats, the Mind ſlow, Appetite and Digeſtion low; the ſpring of the Veſſels is relaxed, the capillaries, near the Bodies ſurface eſpecially, are diſtended; here cold Bathing afford the beſt, ſure, and moſt immediate Relief; not only to reſtore theſe profuſe clammy ſweats, but to prevent ſlow and inflammatory Fevers; for which, and ſome former Reaſons, the uſe of the cold Bath muſt always be of great ſervice when the Mercury ſtands low in the Barometer: i. e when the compreſion on the Bodies ſurface is leaſt; that what compreſſion or contraction is wanting either from the Heat or Levity of the Atmoſphere, may be compenſated by the refreſhing immerſion in the cold Bath in the Morning.

For the ſame Reaſon ſuch Bathing will be highly neceſſary for Perſons pining under chronic Grief, Fear, Sorrow *&c.* Which ſlacken the Tone of the Fibres, and prepare the way for a Multitude of diſeaſes, ariſing thence. On the ſame account we recommend it to Flegmatic Temperaments, who are dull and ſlow both in their Action and Intellect, pulſe ſlow, heat low, from a laxneſs of their Fibres and a Redundance of Serum in their Juyces. Melancholics, Hyppochondriacs and Hyſteric People will always find much ſervice from the outward preſſure of the Water, which throws the Blood upon the Viſcera and gradually deſtroys it's Lentor, mixes it's parts, reſtores it's motion, quickens it's Circulation, prepares it for, and brings it to the Secretory Glands, there to have it's uſeleſs and hurtfull parts ſtrained off, and ſent out of the Body. The ſame Reaſon will hold good and warrant it's uſe to Cacochimics and Cachectics. This Reaſoning is ſo obvious, that it want no Explanation, nor needs Words, to adviſe the uſe of the cold Bath to the inhabitants of low, boggy, marſhy, fenny Grounds, who are ſo lyable to conſumptive, aguiſh and ſcorbutic Diſorders, whether they ariſe from the great quantity of Water always floating in the Air, or to the ſtagnant putrified ſtate of their Waters, or, (as ſome will) to the Sulphureous and Saline particles hovering in that Atmoſphere.

Corrol: 1 Since the cold Bath acts by a *Preſſure* added to that of the Air; which preſſure is one of the properties by which it's of ſo much ſervice to our Bodies, then the deeper the immerſion the greater the preſſure, and the greater is the Profit reap'd by it. But ſince a body dipt three foot and a half under Water, when the Mercury ſtands at or a little below 28, ſuſtains only a preſſure equal to that of the *Atmoſphere*, when the *Mercury* Stands at 31. Then Diſeaſed Perſons which expect Relief from this Weight of the Water, ſhould dive deeper as the *Mercury* falls in the Tube.

Corrol: 2 Since the *Preſſure* of the Water is of ſo great uſe, *Bathing in the Sea*, is more uſeful than Bathing in common Water, for by letting the Perſon down out of a Boat, he may be immerſed ſix. eight, or ten foot deep, that is he may be made to ſuſtain a Weight of Water added to that of the Air, from 68401b to 120031b Weight, or ſtill more if wanted; then we muſt not forget that the Salt in this Vehicle, as we have found it, even in a rainy Seaſon, is to the Water as 1 to 22, ſo the weight, and conſequently the preſſure, will be encreaſed proportionably. for a Body thus immerſed 10 Foot under Sea Water, ſuſtains near 520lb more weight than in common Water. There we ſee in an *Aſcites* or *Tympanites* with ſound Bowels, where the *Serum* is got out of the Veſſels, and lies in the cavity of the Body, and cold Bathing is uſed for it's Expulſion, the deeper the immerſion with ſafety to the Patient, the more effectual and expeditious muſt it's Effects and Benefit be; for the greater weight is laid on the Body, the more forcibly will the extravaſated *Serum* be impell'd or driven into the Mouths of the *abſorbent Veſſels*: On the contrary in an *Anaſarca*, where the Lymphatics over the whole ſurface, are diſtended, but not broke, the cold Bath well managed, will be of ſpecial ſervice, but then they muſt be dipt more gradually, as the firſt day go only one foot under Water, two foot next two days, then three foot &c. For ſhould they venture in too deep at firſt, it may be of dangerous or fatal Conſequence, by putting a greater *Preſſure* and *Contraction* on the *Bodies* ſurface than the weak diſtended Capillaries can ordinarily bear, without either Stretching them beyond their Tone, or breaking ſome of them, and cauſing them to diſcharge their contents either under the Skin or among the Muſcles. This preſſure and contraction in Bathing, together with Exerciſe, promiſes the ſureſt and beſt Relief to ſuch as have been long accuſtomed to Opiates, the Effect whereof, is great

Relaxation of the Solids, as is plain from their Countenance and Actions; but this ſudden, and for ſome days repeated Contraction, together with riding, will invigorate, and brace up the flagg'd Solids. The ſame Reaſons recommend cold Bathing to ſtudious, idle, ſedentary, inactive Perſons, to brace up theſe Fibres which are let down either by ſluggiſhneſs and inactivity, or by depriving them of a due ſupply of Animal Spirits, by ſpending them on the intellectual organ.

On the contrary, ſince the preſſure, and contraction, are ſo conſiderable, ſuch as have a very weak pulſe are either to avoid cold Bathing, or uſe it of a ſmall depth, and not intenſly cold; for the contraction and dilatation of the pulſe keeps pace with that of the Heart, where one is weak, ſo is the other, and the Blood being forcibly driven from the circumferance, thrown upon the viſcera, and by the vena cava caſt into the right Auricle of the Heart, which being weaker than the Vintricle, it may be ſo diſtended and receive ſuch Reſiſtence from the Blood behind, as may diſturb or weaken it's Motion, or hinder it's full and regular projection into the Lungs, hence faintings, polypous concretions in the Heart, or great Veſſels. On this account cold Bathing is alſo unadviſable to ſuch as have weak Lungs, have ſeveral times vomited or ſpit Blood, have always a ſmall ſqueaking effeminate voice, for they breath the Air out of their Lungs ſlowly, which in the mean time rarifying in the Air Veſſels, diſtends them, preſſes too powerfully on the Blood Veſſels, whereby they are in danger of burſting, and either diſcharge their Contents into the cavity of the Breaſt, into ſome of the Membranes of the Lungs, or by the Mouth. ------ But ſince the Water acts both by preſſure and contraction, which expell the the Blood from the Bodies Circumference, then is bathing unadviſable in old age, where the Solids encreaſing and ſtiffening, become an over match, and too powerfully reſiſt the Fluids, whereby the ſmall Veſſels colapſe and grow up, this gives a greater opportunity to theſe on the ſurface to coaleſce, become impervious and ſtiffen more, and ſooner.

It's from this Superior preſſure and contraction, that Bathing in the Sea produces ſuch ſurprizing Effects in preventing that Madneſs called Hydrophobia, from the bite of a Mad Dog; to the prevention of which it's neceſſary. 1 That the Perſon Bath immediately after the Bite, before any of the Symptoms begin in the leaſt to appear. 2 That he Bath ſeveral times. 3 That he continue as long under Water at each immerſion as he can, for fear of Suffocation. 4 That each time he be let down to a conſiderable Depth. 5 That at each Bathing, he be taken up and plunged down, at leaſt 6 or 7 times and that very quickly. 6 That his diet after, be moderate, cooling, and of eaſy Digeſtion. It's paſt Contradiction, that Sea Bathing often, yea moſtly prevents this Madneſs, when ſpeedily, and regularly uſed. Let us reflect a little on this, and 1 We have often ſaid we know of no Deſigns that can be anſwered by this *Bathing*, beſides preſſure & contraction, which are ſo unlike to drive the poyſon outward that they drive it inwards together with the *Blood* and *Lymph*, from the ſudden and ſtrong Compreſſion of the *Bodies* Surface, ſqueezing and expelling the *Blood* out of it's capillaries, and throwing it in greater Surges upon the Centre. 2 Since driving the *Blood* inwardly by *Bathing*, prevents this fearfull and fatal Diſeaſe, it naturally and neceſſarily follows, that the immediate cauſe of it 's a Repletion, Diſtention and Inflammation of the *Blood* Veſſels, of ſome part in or near the bodies Surface. 3 And Obſervations aſſures us that it happens in the Mouth, Throat, Gullet, and upper Orifice of the Stomach, in theſe very parts, from which the *Saliva* of the mad Animal, was filtred off, hence this diſtemper always falls on theſe parts of our bodies, from which the Venom in the mad Dog was diſcharged. 4 It's alſo plain that this Poyſon is, to our *Blood* as a *Menſtruum* to Liquors to be fermented; It rarifies, ſwells, and increaſes their bulk, as tho there was a great Addition made to their quantity, therefore a Diſtention and Inflammation muſt appear ſomewhere. For that it's an Inflammation, is manifeſt, from it's being attended with a *Fever*, *Thirſt*, *Dilirium*, *Dry*, *White* or *Brown Tongue*, and other like Symptoms. 5 That this *Virus* is of a very diffuſive contagious nature, therefore moſt likely to be a Venine *Alcaline Volatile Salt*. That it's of a Poyſonous nature, is too Viſibly ſeen and felt from it's Effects. That it's *Alcaline* appears from the Heat, Fever and Thirſt. That it's *Contagious*, is known from it's ſpeedy Communication from one *Animal* to another, by touch, depreſſion with the Teeth without a Wound, or Saliva falling on the very Cloaths, That it is diffuſive is evident from it's ſpeedily affecting, and turning all the Animal Fluids to it's own Nature. That it is a Salt, and an Alcaline Salt, is alſo plain, from it's producing the like Effects with that Sort of Salts, as *Heat*, *Thirſt*, and *Parching the Bodies*. 6 Their being afraid of Drinkables, is from their inability to Swallow, becauſe of the Inflammation of the parts, which at laſt is communicated to the Wind Pipe; hence that ſhrill Noiſe wherewith they breathe. 7 From all which taken together, we ſee how the preſſure and contraction of the *Bath* prevents the Diſeaſe, by bracing up the Solids and Veſſels, promoting and encreaſing the Urinary Diſcharge and Perſpiration, whereby theſe *Alcaline Volatile Salts* are expelled the *Body*, the *Blood's* Rarefaction is prevented, and all Stagnation obviated, the adhering of any Lentor or Saline matter either on the outſide of the *Body*, in the excretory Ducts in the Skin, or on the inſides of the Veſſels rendered impoſſible Circulation Secretion, and Evacuations are fully and regularly carried on. Since cold bathing is ſo effectual in preventing the moſt fatal & tragical Inflammation, irreſiſtible by all other known means, may not this give Encouragment to bring this practice more in requeſt, during the reign of epidemic external Inflammations chiefly, as quincy &c. To ſtrengthen the body and expel the Humours by Perſpiration and urine? But tho' it may be ſervicable in preventing ſuch Inflammations, yet may it be as dangerous, after any large Inflammation has ſiezed, eſpecially where it is near or upon any of the Ventricles for ſuppoſing either many Veſſels too much upon the Stretch, or their contained Liquid either too viſcid, or globular to be returned then from the ſudden Propulſion of the Blood from the Circumference to the Centre, ſome of theſe Veſſels may either be broke, or ſo dilated, as they may for ever loſe their Spring. I have known ſome habitual ſlight Quinzies ſoon cured, by waſhing the part in cold Water, and laying over it a thick folded Linen cloath dipt in Water.

Since cold Bathing throws the Blood, eſpecially that in the capillaries on the Bodies Surface, ſo forcibly inwards; then in Spring and Harviſt, this ſeems a promiſing courſe to prevent Spring and Summer Fevers, or autumnal Agues and intermittings. The firſt being often fatal to young people of a full habit of Body, eſpecially bibbers, the laſt are often Epidemic and Chronic. ------ Nor can I think of a more certain preventative of ſlow Fevers, whoſe immediate cauſe we imagine to be obſtructions in the ſmall Veſſels. *Corrol:* As the preſſure of the *Bath* depends on the depth of Water we are immerſed in, ſo the contractile force with which it acts on our Body, is in proportion to it's coldneſs, which may be eaſily determined by the Thermometer, and conſequently, how much greater contraction one Water will make on our Bodies beyond another; on which account we hope, a Table of the ſundry degrees of cold in ſeveral *Baths*, taken by the ſame Glaſs, cannot be unacceptable to the Reader, as it has never been done before. It's from this *Contractile force* impreſſed by the cold on our Bodies, that Bathing is of ſpecial uſe in ſeveral exceſſive Evacuations, as *Fluor albus*, *faint clammy Sweats*, *Menſes immodici*, *faintneſs and lowneſs of Spirits*, *Hyppo*, *Stupor*, *Weakneſs or Laxneſs of the Nerves*, *Lameneſs*, *pains of the Stomach and want of Appetite*, *Scorbutic fixed*, *Erratic*, *Rheumatic and Arthritic Pains*, *looſe*, *ſoft*, *painleſs*, *white Swellings*, *Deafneſs*, *Loſs of Speech*, *Atrophies*, *Lethargy*, *lax ſtamina*, *old Gleets*, *obſtinate Agues* (if the Blood is not too ſizy, for then they are often fatal,) *Erection of the Penis diminiſhed and loſt*, *Cremaſter Muſcles relaxed*; *Abortion* &c. The cauſe of this contraction, is either from the Senſation and Stimulation of cold upon the *Body*, or the compreſſion of the Air in our Solids and Fluids; as the Air in Spirit of Wine contracts by the increaſe of cold. This compreſſion or contraction of the Air is twofold. 1 From the preſſure of the Water, for tho the Air be compreſſible, yet Water is not. 2 From the cold which inſtantly reduces the Air in the Blood to leſs Space; but to how much leſs, the Spirits in the *Thermometer* ſhow us with certainty. But we have no exact Method to meaſure the certain degree of *Stimulus* impreſs'd on the Solids.

Having ſo far ſeen the Viſible and demonſtrable Effects of the cold Bath, we may in ſome Meaſure be able to comprehend the Reaſon of it, for the Revd: and Ingenious Mr. *Hales* (Statics Vol: 1 P: 299. 3000) has proved, that Air exiſts in a much larger proportion in the Solids of either Animals or Vegetables, than in their Fluids. And 1 Since upon the compreſſion of this Expanded Air, the conſtituent parts of the elaſtic Flexible Solids are brought nearer to one another, ſo much larger is their point of contract, their coheſion is ſtronger. and they act with greater force: on the contrary the more extended a Fibre or Veſſel is; the ſmaler it's point of Contract, the nearer are it's parts to ſeperation, or loſs of Continuity, and the weaker, or more painfull it is. 2. Suppoſe the Air be uſeful as one of the principles of union, it cannot act ſo ſtrongly, whilſt ſo greatly dilated and expanded; therefore the nearer it's particles are brought together, the more ſtrongly will they cohere. But whether the Animal Oyl, or Air, or both, be the cementing principle; we are ſure Oyl abounds much with Air; this is one of the ways by which the cold Bath braces and ſtrengthens the Solids, as well as abates the Rarefaction, and diminiſhes the Bulk of the Fluids. Here we might add what was already hinted *viz.* 1. That ſince the contraction from the Bath is ſo ſudden and great, this forbids it's uſe to overbulky, corpulent Bodies, whoſe Fibres are ſo choaked up and lubricated with Oyl, that either they have not room to contract, or are too much dilated, ſo as they cannot ſhake off, nor expell ſuperfluous and hurtfull Humours, but by theſe ſudden jirks can only have their Spring weakened to no purpoſe. But ſuch as are diſpoſed to corpulency, yet not arrived at this monſtrous bulky habit, we cannot deviſe or recommend a more ſure, ſafe and certain preventative than cold Bathing. 2. This ſudden contraction, and great preſſure, forbids alſo the cold Bath to perſons very hot, becauſe the ſudden jirk of the relaxed Veſſels, in propelling and expelling their rarefied Fluids to the Centre, the Diameters of the Veſſels will be ſuddenly ſhortened, and the divided Globules of Blood will again run together, and in longer Maſſes, than the contracted capillary Veſſels (which are conic) can poſſibly admit of, or let paſs, but they muſt ſtop, and not only *they*, but all the Globules behind, in the ſame Branch from the Cone to the laſt Diviſion. whoſe more thin and ſerous juyces, will by the Action of the ſurrounding parts be driven on, but the more Globular, and groſs will ſtop, hence are obſtructions producing an Inflammation But where the Blood is moſt rarefied, the Veſſels weakeſt, the protruſive force leaſt, and the contraction ſtrongeſt, and conſequently where the Inflammation will happen, is impoſſible to foretell, hence may it be more or leſs dangerous according to the uſefullneſs of the place where it fixes, the degree of the Bodies Heat, Bloods Rarefaction, and Contraction of the Solids ——— The ſame inſtantaneous contraction and preſſure is alſo dangerous, when the Stomach is full, for the Veſſels being then diſtended with juyces, tho the Blood be carried up in a perpetual and now large Stream to the Head, along the bonny Caſe of the *Vertebræ* of the Neck, by the *Carotid Artery* where the preſſure of the Water cannot touch, yet it deſcends by the *jugular* and other Veins of the Neck, without this Caſe, where the weight and coldneſs of the Water act moſt powerfully any may leſſen the deſcending quantity, whereby ſome of the ſmall Veſſels of the brain may be overſtretch'd and broken, broken, and bring immediate Death. 2. Or the blood being thrown by too full a ſtream into the right Ventricle of the Heart, and thence into the Lungs, may ſtretch ſome of the ſmall Veſſels beyond their Tone, cauſing *Pleuriſies*, *peripneumonies*, *Aſthmas* &c. Or the *Auricle* or *Ventricle* of the Heart it ſelf, may be ſtretched beyond the ſudden Recovery of the Spring of their Fibres, hence ſudden Death. Or too great a Quantity of blood, may be ſuddenly thrown into the Veſſels of the Stomach, Liver, or other Viſcera, hence *Inflammations*, *Fevers* &c. The ſame cauſes forbid bathing, eſpecially in the Sea, to people of unſound bowels, or any inward part being weaker or it's Veſſels more diſtended, worn, or corroded, than the reſt; and to ſuch as have *Vomicas*, *Impoſtumes*, or large collections of Matter not extravaſated, for the preſſure will throw the Fluids more plentifully and forcibly on that part which gives the leaſt Reſiſtance, hence a breach, or irrecoverable diſtention of ſome of it's Veſſels. But where either theſe or Hemorrhages from the Breaſt, Stomach or Lungs, forbid cold Bathing; I cannot enough extol the uſe of Bitters, as the alone Succedæneum.

A Table of the ſundry Temperatures of ſeveral Baths and Springs.

Bath	*Temper*	*Bath*	*Temper*
Holt Bath,	90	St. Anns Well	58
King's Bath	87	Bingham Well	53
Heat of a Young Man's	80	Do	56
Body in a high Fever.		Briſtol	52*b*
The ſame Recover'd &	67	Matlock Bath	45
in health and reſt.		Do	46
Buxton Bath	59	Do Stable Water,	44

Stonny Middleton	40
Middleton Bath,	40
Wirksworth	39 *b*
Do	40
Stonny Middleton	41
Bakewell,	37
St. Winfred's or Holy Well.	32 *b*
Ganesburg	31
Kirbythore Bath	31
Cheltenham Spaw	31
Malvern Dogwell	31
Stone Bath	30 $\frac{1}{2}$
Harrigate Bath	30 *b*
Moſslake Bath	30
Acworth Bath	30
St. Mary Wellington	30
Newnham Regis	30
Wynn by Newport,	29 *b*
Liquoris Green	29
Bradforth Lady Well	29
Gipton by Leeds	29
Barnſley Bath	29
Lincoln Bath	29
Litchfield Bath	29
Malvern Holy Well	29
Air on the Top of Croſsfell	29
Sun Shine in a clear Froſt.	29
Nottingham Bath,	28 *b*
Scargill Sheffield	28
St. Kathen Doncaſter	28
St. Mongo's Cockgreave	28
Childwell	28
Preſton Lancaſhire	28
Mancheſter old Bath	28
Burliegh Sheffield	28
Old Parkwel Wiſper	28
Wakefield Bath	28
Crofts Darlington	28
Hartlepool Spaw	28
Durham Bath	28
Do Sulphur Well	28
Codsalwood Sulph: Well	28
Aſtrope Wells	28
Cartmal Well	28
Carſlile Chalybeate	28
Kirbythore Bath Spring	28
Woodſtock Park Bath	28
Willowbridge Bath	28
Fowforth York	28
Cheſter Bath	27 *b*
Ormskirk *Bath*	27 *b*
Mancheſter N Bath	27 *b*
Ripon Bath	27 $\frac{3}{5}$
Barnſley Bath Spring	27 $\frac{1}{2}$
Wardrew Spring	27 $\frac{3}{4}$
St. Nicholas's Thorp	27 $\frac{4}{8}$
Harrigate Bath Spring	27
Ichley Bath	27
Settle Bath	27
Acworth Bath Spring	26 $\frac{1}{2}$
Ichley Bath Spring	26
Bright pool bath	26
Padgham heights bath	26
Croſsfell Chalybeate	26
Aſhover bath	26 $\frac{1}{2}$
Freezing point	18
River Water in a Froſt	21
Hardeſt Froſt of 1738	13
Snow and Salt mixt	0
3 perennial Springs tried in Froſt and July	29

As all Baths reſorted to, and uſed, for the Recovery or Preſervation of Health, are either hot, warm tepid, cold, or very cold; and are relaxing, diluting, anodyne, Stimulating, compreſſing or contracting, which require Waters of different Temperatures; but this true difference as has been ſaid above, having never been exactly obſerved and taken by any one hand and *Thermometer* before; we imagined that this Table could neither be diſagreeable nor uſeleſs; for: 1. We ſee hereby how deluſory and uncertain their ſenſation of feeling it, who will have St. *Wenifred's* Well to be the coldeſt Bath in *England* or *Wales*, St. *Mongo's* at *Cockgreave* next, and St. *Katherines* of *Doncaſter* next; &c. When in reality there are ſeveral cold Baths above two degrees colder than the laſt two, and ſix degrees colder than the firſt; which is near a medium between the freezing point and St. *Wenifred's*. 2. This determines the ſtrife among ſuch as are differently extolling each their own Baths as the coldeſt and beſt; when, in Truth, neither coldeſt, nor mildeſt may be moſt ſuitable in ſeveral Diſorders, but the main ſtreſs or dependence may be upon ſome Minerals which muſt impregnate the Water to make it more healing, as in the *Leproſy*, *Scurvy*, *Kings-evil*, *Ulcers* &c. 3. As there is a variety of of Diſorders which call for cold bathing, ſo of Conſtitutions Ages, and different ways of Life, which neceſſarily demand different Temperatures of the Waters uſed for Immerſions; thus Males, youth, middle age, robuſt, ruſtic, laborious people, and inhabitants of cold mountaineous places, can bear a colder bath, than, Children; Females, old people, and ſuch as are accuſtomed to a warmer ſituation, eaſy and delicate courſe of living; for to ſuch the degrees of 28 29 or 30 will be cold enough, a few caſes excepted. 4. When we cannot diſpenſe with the want of the coldeſt baths, we muſt not in the laſt caſes venture on them firſt, but begin with the milder, for ſometime, as 29 or 30, then when the body has been a little inured to theſe, deſcend to 26 or 27 to finiſh the cure. 5. In old obſtinate pains, whether more remiſs, or acute, the coldeſt baths will perform a cure both more effectually and expeditiouſly than the milder; or in great Relaxations, or where the Diſeaſe lyes deep, as in the Siatica &c. 6. It's neceſſary to know the exact temperature of the Bath, in order to determine the time that the Bathers ſhould ſtay in it. When the caſe requires the greateſt contraction only, their ſtay muſt be very ſhort; in the general, the colder the Bath, the leſs time muſt we ſtay in it, and we ought to begin and leave off with the ſhorteſt time and ſhalloweſt immerſion in it; that both preſſure and contraction may be gradually encreaſed & decreaſed. As to the time from two to ſix or ſeven Minutes, is ſufficient in a very cold Bath; but this muſt be adapted to the conſtitution. As to depth, from one Foot to five is enough; for if too deep the preſſure may be too great and ſudden, and throw the Blood in too great & quick ſurges upon the Viſcera of head, breaſt and belly, and endanger the breach of ſome of the Veſſels; eſpecially if either weak or diſtended before. If too ſhallow, there is not weight enough of Water; the Repulſion of blood from the Circumferrence to the centre, will not be powerful enough to anſwer the Deſign, Expectation, and Neceſſity of the Bathers. For whether the preſſure of Water on the Bodies ſurface be equal to 34000, or near 40000lb Weight, either of them will not allow of an Additional preſſure or contraction from cold Water, to ſuch whoſe Veſſels are full of Fiery Saline Blood, from immoderately ſwallowing down, hot ſtrong and inflammatory Liquors; ſuch Experiments have proved fatal to many; as alſo to thoſe whoſe Stomachs being diſtended, preſs upon the deſcending Trunk of the Aorta and force too great a quantity of Blood to the Head. For the ſame Reaſon the *Colon* and *Rectum* ſhould be emptied, or kept eaſy, leſt they preſſing on the iliac Arteries, may produce the like Effect; therefore very coſtive perſons; or ſuch as have very indurated Excrements lodged in theſe inteſtines, muſt have them diſcharged before Bathing. All Bathers ſhould be ſure to go in overhead pretty deep or they may expect a ſwiming, or pain of the head, from it's Veſſels having too great a load thrown on them, when the reſt were compreſt and contracted. Deafneſs ſucceeding Bathing is from a Relaxation of the drum of the Ear, and may be prevented by putting the Fingers into the Ears, or Wool moiſtened with a little Oyl. Continuing too long in the cold Bath often occaſions cramp, horrors, fevers looſeneſs, *&c.* For whenever the ſenſation of cold becomes ſevere, we ſhould get out. Experience proves it beyond contradiction, that cold Bathing, Temperance, and moderate Exerciſe, are the beſt antidotes againſt hereditary *Scurvy*, *Stone*, *Convulſions*, *Conſumption*, *Melancholy*, *Hyppo*, *Rheumatiſm*, *Scurff*, *Leproſy*, *Stupidity of Mind*, *Weakneſs of the Limbs*, *Pains on change of Weather*, *Cough*, *Vomitings*, *Palſy*, *Kings evil*, *Lethargy*, *want of Sleep*; but then in ſeveral of theſe it ſhould be joyned with Water drinking for common tipple; It's worth obſervation, that Water drinkers are temperate in their Actions, prudent, and think more connectedly; are ſeldom afflicted with the following Diſeaſes, *Apoplexy*, *Palſy*, *Headach*, *Blindneſs*, *Gout*, *Stone*, *Convulſions*, *Trembling*, *Madneſs*, *Hiccup*, *Indigeſtion*, *Habitual Thirſt*, *Burning heats*, *Aſthma* &c. *Galen* would not allow of cold Bathing under twenty five Years of Age, and in Summer, but *Oribaſius* and *Agathenus* who uſed and preſcribed it much more, and knew it's effects much better, adviſed nay preſſed the uſe of them in all ſtages of Life, and all ſeaſons of the Year, eſpecially when the Water is cold, and in infancy, and I think Sir *John Floyer* and Dr. *Barnard*, have made out it's uſefulneſs for preventing and leſſening ſeveral diſtempers of children who are naturally lyable to *Fevers*, *Pains*, *Convulſions*, *Erruptions*, *Swellings*, *Inflammations* and *Excoriations*. And ſuch as have been accuſtomed to bathing the preceeding Summer, may ſafely continue it in Winter.

7 Hence we know the depth from which the Spring which ſupplies a Bath ariſes, for if it's very ſuperficial, it's Temperature varies with the *Atmoſphere*, the Water being more remiſſly or intenſely cold, as that is in any fixt ſtate of cold or hot Weather, and ſuch Baths are not adviſable, being now tepid, then cold, and another time juſt at the freezing point. 8 This uſe of the *Thermometer* is of ſpecial ſervice in Mineral Springs; for when their Waters are affected by, or fluctuate with the *Atmoſphere*. it's a ſure ſign that their impregnating Minerals lie very ſuperficial near the day, and all digging or ditching near them is dangerous, if they are of any great Note; for that may either deſtroy thoſe Mineral principles, which give them their Medicinal Qualities, or lay ſome part of them open to the Air, whereby theſe parts may be exhaled, corroded, or ſomehow altered by that hetrogenious Body, and it's Salts; thus Sulphur Waters or Chalybeates may be quite ſpoiled; but if it's a Water of no Eminence, and ſeveral others of the ſame ſort near it, we have an opportunity to be informed of the whole impregnating Principles, which may give great light into others of the ſame kind. 9 We know whether Mineral Waters whoſe virtue reſides chiefly in the volatile parts, are injured much by Rains, for then they will vary in their Temperature with the Air.

10 We ſee the hurt done to cold Baths, by bringing them from the Spring to the Reſervoir in a Pipe, Gutter or Channel, after they are come to the day; or of making two Baths, an inner and an outter from the ſame Spring of common Water, or of letting the Bath lie open to the Air, which ſhould be covered with ſome Shelter or Houſe. Thus old *Parkwel*, or *Blind bird well* near *Worsburgh*, the Spirits in the Spring were two degrees lower in the outter Bath, tho' the day was not hot. *Barnſley* Bath raiſes the Spirits in the *Thermometer* three degrees and a half higher than the Spring; *Acworth* Bath the ſame; but ſuch as have a cloſe Houſe immediately over them, loſe not above one degree as *Litchfield*, *Willowbridge*, &c. All perenial briſk Springs, have this character common to them with Mineral Waters, that they weigh lighter at the Spring than afterward, and this ſuch Baths loſe, by being carried off from their Origine, the ſame diſadvantage attends in many peoples Bathing before the Bath is let off, & a new one gathered, where the Spring is not ſtrong, thus at Night after People Bathing all day the Spirits in the *Thermometer* ſtood at 30½ in *Harrigate* Bath, but next Morning in a full Bath, they fell to twenty ſeven. The Advantage of a cold Bath beyond River, Brook, or Rivulet Water, is, that the firſt keeps pretty near the ſame Temperature in all ſeaſons of the Year, changes of the Weather and States of the Air, as to heat or cold, provided it be a perennial Spring, and riſes deep (and none other is fit for a cold Bath.) But the Temperature of the laſt Varies with Seaſons, Air and Weather, the firſt alſo retains the above Mark of a Mineral Spirit, but the laſt do not. In Winter and Froſt theſe three are dangerouſly cold; and in Summer, too tepid to anſwer any valuable purpoſe, except to delicate people and children, who, to reap any great profit in chronic diſorders, muſt ply them, longer than either patience or weather will ſerve. Beſides the uſe of them with that Mineral Spirit, conduces not a little to their healing property, as that in *Ichley*, *Willowbridge*, *Malvern hills* &c. And moſt diſeaſed people are generally more regular in the uſe of thoſe Baths, than they are with thoſe of Rivers *&c.*

11 Hereby we ſee the decietfulneſs of a common Notion, that perennial Springs are much warmer in Winter than in Summer, becauſe in a great Froſt, they ſmoak or reek, but from repeated Tryals I have found them near the ſame at all times, which ſhows, that neither the

Heat of the Summer, nor cold of the Winter, affect common Springs ſo deep in the Earth. But upon much frequenter Experiments I have found that great, or long *Froſt*, *Snow*, or *Storms* increaſe the Heat of the warm Waters, from the Earths ſurface being lockt up, and their Heat in a manner reverberated. 12 Tho the open Air in Froſt, is much colder than either River or cold Bath, yet is not walking, ſtanding or running in it a few Minutes equal to the cold Bath, for tho' there be contraction, yet there wants preſſure, and both are neceſſary and muſt go together in cold Bathing. 13 We find that the coldeſt Baths we meet with, are far ſhort of the cold of either running or ſtanding Water, even in a moderate Froſt, and theſe again are ſhort of the cold Atmoſphere in the Suns Abſence. For in another *Thermometer Padgham* Heights bath brought the Spirits down only to Thirty four, but both a jingling Stream, and ſtanding pool of the River brought them to Thirty ſeven in a gentle Froſt, but the open Air laid them to Thirty nine. The Sun raiſed them to Thirty one in January ſo that as the Air is warmer than Water in warm Weather, ſo the laſt is colder than the firſt in cold Weather. 14 Artificial Froſt being o the Freezing point Eighteen, and the coldeſt Bath or Mineral Spring Twenty ſix. Then the difference between firſt and ſecond, is to that between ſecond and third, as nine to four, from the coldeſt Bath or Spring to the mildeſt cold Bath is ſix degrees difference. The Mean of moſt cold Baths being Twenty eight and Buxton Fifty nine, and the hot Bath at Bath Ninety, then is Buxton very near the Medium between cold Baths and the hot Bath at Bath, there being Thirty one degrees between each; and Stony Midleton, and Wirksworth warm brooks, are near a Medium between the Freezing point, and Bodies heat in a healthy ſtate at Reſt; and Matlock the Medium between artificial Freezing and the hot Bath. Midletons are near the Medium, between artificial Freezing, and the heat of a young perſon in an acute ardent fever. Then we ſee the different Temperatures of the Air at the ſame time of the day, within three Miles diſtance. *viz* On the Top of the Mountain or promontory of croſsfell, and in the valey below, the firſt being Twenty nine the laſt Fifty. 15 Since there is ſuch difference in the depth of the Origine of Springs; there may be, and are, abundance both of Medicinal and common Water Fountains which never come to the Day. But are convey'd by Subterranean chinks or chaſms, to ſome large Collection of Waters, as the Sea, Rivers &c. 16 Perhaps, if the Sundry Temperatures of Waters produced by the Sundry Earths, Foſſils and Minerals, both ſimple and compounded, were exactly known, it might be one mean or aſſiſtant towards diſcovering ſeveral Minerals, whoſe parts not being diſſolvable in Water, no mark of them is otherwiſe to be found in thoſe Springs.

In the firſt Manaſcript, I had added other three Colums to this Table, *viz.* the Day of the Month, the Temperature of the Air, and common Water, at the ſame time, when I tried the Bath. But finding them uſeleſs with regard to perrenial Springs, which keep pretty much at a ſtand, I left them out. Superficial Springs, and ſuch as riſe out of a hot running Sand, are much affected by the heat of tbe Seaſon. as Bingham Well, Ganesburgh, Kirbythewer. &c.

17 Trom this Table, we may find out the Severity of any extraordinary hard Froſt, or exceſſive Heat, that may happen whilſt the uſe of Thermometers is known. Or the Warmth, Temperatneſs or Coldneſs of any Springs that may be hereafter diſcovered. Or how much the Spiings Seaſons, or Temperature of humane or other Animal Bodies, in other Countries, whether near the Equator or Poles differ from ours in heat or cold; and ſo comparing them with one another. For let the Diameter of the Ball, and Cavity of the Tube of a Thermometer, &c, Be what it will, when three things are given it's eaſy to find a fourth by the ſame Tube; if the ſcale be exactly divided into more or fewer equal parts of an Inch. Thus, 1 Take the degree of natural Heat of a healthy temperate man's Body, aged about thirty Years, in Bed in a Morning, after the Nights good natural reſt. 2 The cold of any perennial Spring, which Smoaks in a hard Froſt. 3 The degree of cold of Snow and Salt mixt. Ex. Gr. In the exceſſive Cold and Froſt of *Decr.* 21 22 23 24 &c. of 1739. I took a new Thermometer, put a Sliding Pipe of Silver on it, full of holes on both ſides, to ſee the Aſcent, Deſcent, and Reſting of the Spirits through. Each Inch of this Pipe was divided into Twenty equal parts, and tried the degrees of cold as below. I uſed alſo this Thermometer on it's own Wooden Frame, each Inch whereof was exactly divided into 8 parts. And the Spirits ſtood thus on both.

In

In the Silver Tube	On the Board.
The heat of a healthy Body,	275 --- 110
Set in a Perennial Spring	158 --- 62
Decr. 26 In a calm, clear, open ſtrong Froſt Air.	115 --- 55
Decr. 22. Cloudy, Cold, High E. Wind and ſome flying ſmall Snow.	80 --- 31
In River Water between two boards of ſtrong Ice.	125 --- 49
Hid under ſoft Snow,	122 --- 48
Set in Snow and Salt.	55 --- 21

This Tube having hung Six Years in my Stair caſe, the Spirits never fell under 72 *before, but* Decr. 22 *they fell down to* 84. *which is the greateſt cold by ſome degrees ſince* 1709. *And by this any future cold or heat may be determined.*

Of Warm and Tepid Bathing.

HAving briefly conſidered ſome of the Effects of cold Water both Common and Mineral, in ſeveral Diſorders, we ſhall now turn our thoughts upon tepid Baths, both Artificial and Natural. But before we come to their Benefit and Uſes, let us enquire into their manner of acting upon the Body. And that is firſt by Relaxation; as the cold Bath produced Contraction, or a Force whereby two points in any Fibre (for all our Solids and Veſſels are conſtituted of Fibres) are forced from a more remote or looſe contact to a more contignous or near; ſo Relaxation is that alteration in the Solids, whereby they are capable of greater Extention, and yet preſerve the coheſion and contact of their conſtituent parts, hence they become more flexible and dilatable, whereby the Diameters of the Veſſels are enlarged. Tho' cold Bathing would in time relax, yet few, if any human Bodies can ſuſtain it's rigour ſo long, but the warm Bath relaxes preſently and ſoftens all Bodies, as Skin Horns *&c.* This Relaxation is not confined to the Bodies ſurface only, but the agreeable ſmooth ſenſation of it is communicated to the brain, and by it, all over the internal parts of the Body alſo. 2 The warm Bath acts by penetration; tho ſome Water may enter the Skin in cold Bathing, yet it's inconſiderable in compariſon of what pierces the Body in tepid Bathing; which Dr. *Wainwright* has demonſtrated and *Quincy* from him, *Verbatim.* For tho' at a common *Medium*, *Sanctorius* found that we perſpired. 5-8ths of our Meat and Drink dayly, yet even this force and quantity ariſing from the Skin, is too little to prevent the inſinuation of Water into the pores, for Dr. *Ptcairn* has proved that the matter of inſenſible perſpiration in a Minute, is the 1200 part of the place it comes from i: e: 1200 Scruples of the Skin perſpires one ſcruple in a Minute; or the whole Skin ſhall perſpire a quantity of matter equal to the weight of the whole Skin, in Twenty Hours i: e: in 1200 Minutes. Or one Ounce of the Skin perſpires 1--1200 part of a Dram in a Minute, now ſuppoſing a ſquare Inch of the Skin weigh one ounce, then this Inch perſpires 1--1200 part of a dram in a Minute, but the ſame Inch of Skin in the Bath, is preſſed upon, by an additional weight of Water epual to 96 Drams, or 24 cubical Inches of Water. Now ſince only one 1200 part of matter or weight is perſpired from an Inch of the Skin in a Minute, therefore is the Elevation or protruſion of the matter perſpirable, reſiſted by a Weight 115200 times greater than it's ſelf; for 1200 multiplied by 96 makes 115200. But this is not credible nor poſſible, ſo that we muſt allow tepid Water to enter into and mix with the Animal Juyces in Bathing. of this we are convinced not only by Theory but Experience for we have found ſome that after ſtrong Rubbing and Friction, and being dreſſed $\frac{1}{4}$ of an Hour, yet have weighed an Ounce heavier than when they went in. Not only are we ſatisfied that the Water in tepid Bathing pierces the Skin and mixes with the Juyces, but that alſo the Water floating in the Atmoſphere in foggy Weather, enters it. For Dr. *Keil* found that by his Servants ridding out in ſuch a Night, his Body gained Eighteen Ounces in weight Nay we are further convinced from Obſervation, that ſuch as uſe tepid Baths much, have the Excretory ducts of their Skin ſo cleared, and the pores ſo open, that four times the quantity of Water will be impell'd through their Skin, as is into the Skins of ſuch as were ſtrangers to it before. This impulſion into the Skin is not from any Suction there, but from the preſſure of the Atmoſphere out of the Water, and of both Air and Water in the Bath; and ſince we have ſhown before that this preſſure throws the Blood from the externals upon the internals, the Water being got into, and mixt with the Juyces, muſt with them be caſt into the Blood, and ſo into the whole habit of the Body. 3 As an effect of Relaxation, Preſſure, Intromiſſion, and Mixture of the Water with the Fluids, comes dilution, the blood being made thereby thinner, and it's particles rendered ſeparable with more eaſe and leſs force; for the particles of Water mixing with the Blood in circulation, will be interpoſed among the Globules of Blood and render the whole Maſs thinner and leſs coherent, in proportion to the admiſſion of Water in the Bath, and that intromiſſion will be according to the Denſity or Levity, Laxneſs or Hardneſs of the Skin. From the whole we ſee that the Effect of tepid Bathing depends on the preſſure of the Water, Relaxation of the Solids from the warmth of the Element, Impulſion and Admiſſion thereof into the Skin and Veſſels, and laſtly, dilution from it's mizture with the Blood Now let us ſee 1 When and where theſe cannot be of any benefit to us. 2 When we may reaſonably expect real ſervice from them. And

Firſt, The Relaxation may open the pores of the Skin, and give way to the perſpirable matter to fly off, yet if this ſame matter is too thick Viſcid or otherwiſe Groſs, and Cohering, Crude and Indigeſted, that it's too large and cannot paſs the Excretory ducts of the Skin; that ſame ſoftening and widening the cutaneous pores, may only cauſe a greater Flux of this matter to the relaxed ſurface, where, by the largneſs or Viſcidity of it's parts, it will be ſhut up in the Excretory ducts or capillary Veſſels of the Skin; where, from the continual ſupply from behind, the obſtructions muſt be increaſed, and either raiſe a Fever, or irritate the Solids to increaſe their quantity of ſenſible diſcharges. The Method to prevent this Miſchief by tepid Bathing, is 1 to thin the Humours by an attenuating, inciding, thinning diet, and temperance. 2 To clear the firſt paſſages by a Vomit and mild Purge. 3 To uſe the Fleſh Bruſh Evening and Morning for ſome Days. 4 To take at Night ſome Diaphoretic, as Camphire, 5 To uſe moderate Riding, this being the moſt advantageous Exerciſe can be uſed for promoting Digeſtion and Perſpiration.

2. Since Relaxation is the Effect of Tepid Bathing, then muſt it be highly injurious to Perſons of lax Solids and Veſſels, for it will extend, dilate and weaken them more, as in a Conſumption, Dropſy, Rickets, Kings evil, &c.

3 Seeing Relaxation by Tepid Bathing, Occaſions a greater derivation of Juyces and Humours to the Skin, there to be let out and diſcharged, then muſt it be highly prejudicial to atrophic emaciated Bodies, and alſo to ſuch as are lyable to exceſſive Sweatings, or to thoſe who have a quick pulſe, thin Fluids, a hectic Fever, &c. For in all thoſe the expence of the Animal Juyces is too great already, and whatever increaſes that, ſubſtracts from the pining Body, and haſtens it's ruine. 4 This ſhews the Miſchief of tepid Bathing to idle, ſedentary Perſons, who Eat and Drink freely, but uſe not Exerciſe anſwerable to it: And alſo to Studious People, who ſubſtract too much from the Organs of motion, to beſtow on thoſe of the intellect, to the depauperating, and relaxing of the firſt. But to come to the real advantages of the tepid Bath, they are many, and extend to a great Variety of caſes, even as many as proceed from too Springy, Stiff, Rigid, Inflexible, Indilatable Fibres and Veſſels, and either their too great *Conatus*, or Struggles to bring themſelves from their Circumference to their Centre, either to narrow, or ſhut up the cavity of the Tubes; and their endeavour to ſqueeze, repell or hinder the influx of the Fluids, and to prevent the expulſion of the Blood from the Heart or out of the great Veſſels. 2 From ſome unnatural and extraneous Body lodged in the cavity of ſome ſmall Veſſels, extending, widening and tearing it. Or 3 From ſome ſharp ſaline matter irritating the Fibres and Veſſels, raiſing pain, heat, throbbing a Fever, &c. Or 4 ſome adventitious load laid on the Surface or extream parts of the Body, by the Retention or diminution of the inviſible diſcharge. 5 From ſome putrid Humours.

mours hoarded up in the Blood, and to be ſeparated from it, and thrown upon the ſurface. For the laſt intention, topical Bathing, or Fomenting, is of unſpeakable ſervice, in ſmall pox, meaſles or other Diſeaſes, where the health & life of the patient depends on regular cuticular Eruptions. The Benefit of this I have ſeen ſo often that I am ſurprized it is not more uſed dayly, as it highly deſerves; for by relaxing the Skin of the Extreams it may be made ſuſciptible of a large ſhare of that matter, to the no ſmall Relief of the Head, Face, and Vitals, upon the ſafety of which depends the perſons Recovery. Its the Thickneſs and Stiffneſs of the Skin that makes theſe Diſtempers moſtly dangerous, and often fatal, after Youth is over. Now the Skin is not to be ſoftened by expulſive Cordials, hot, and Spirituous Medicines, which rarify the Blood, increaſe it's Velocity, and ſerve to turn a mild Diſeaſe into an inflammatory, and fatal one; or to drain out of the *Body* by Sweat, the more thin and aqueous parts of the Blood, which ſhould prepare the Skin for reception of the morbific matter, and fill and keep up the puſcles on the Skin. It is from this denſity, ſtiffneſs, and Rigidity of the Skin that Pleuriſies, Peripneumonics, Quinces, and other inflammatory Fevers are moſtly fatal to Ditchers, Fiſhermen and others who are much in the Water, and are therefore much obliged to ſenſible than inſenſible Evacuations; ſure a more rational and promiſing Remedy cannot be propoſed than tepid Bathing, with bleeding which may diminiſh the quantity of Blood & ſoften the Skin, cleanſe its excretory ducts, & make way for better perſpiration. In all preternatural Watchings, whether with or without a Fever; In theſe cold fits, which uſher in acute Fevers, where the Attrition of the *Liquids* againſt each other and their Veſſels are leſſened, a Stagnation of the Fluids, at the Extream parts is threatened, nothing can be more miſchievous than heating, ſtimulating Medicines, and nothing better, ſafer, and more beneficial can be done than Tepid Bathing and friction after it, by which many dangerous and fatal Fevers might often be wholly prevented. In Ravings and Dilirium in a Fever, or where there is a too great Raptus of the Blood to the Head without a Fever, a ſeaſonable uſe of theſe Baths would be be of inexpreſſible Service. 1 To Soften, and Dilate the Skin and Veſſels, and diſpoſe them for a more equal diſtribution of the Blood. 2 By leſſening the irritation of the Veſſels by the Stimulating Salts of the Blood. 3 A Dilirium is preceeded by very thin pale Urine, which ſhows the urinal Salts to be retained in the Blood, and ſhortly to be thrown on the ſmall Veſſels of the Brain, to the eminent danger of the Patient. Now tepid bathing, is of all others the moſt likely Method, and has often been found ſo, in Effect, to relax and dilate the Strainers of the Kidneys, and make way for the filtration of the Salts retained in the Blood, which had erritated and contracted the Ducts of the Kidneys, ſo as the Diameters of the Veſſels were too ſhort, or narrow to let the Salts paſs. In violent & ſudden paſſions of the Mind as Fear, Grief, Joy *&c.* which raiſe the Elaſticity of the Fibres and Solids to their higheſt pegg, and often end in immediate Death, Madneſs, Watchfullneſs Ravings, or Fevers; can any thing be more abſurd and monſtrous, than Bleeding, Bliſtering, and other Evacuations, or cheering Cordials *&c.* when it's plain the Solids are wound up to their higheſt pitch, the Fluids have been impetuouſly and violently ground down and expelled before, as is ſenſibly perceived by the Noſes of the Byſtanders often? Here the whole chance lies on immediate Relaxation and Dilution, and theſe can be no way ſo ſpeedily and effectually procured as by tepid bathing, and frequent, plentifull, tepid, ſoftening paragoric Draughts, which may at once inwardly, and outwardly looſen, ſmooth, and fill the Veſſels, and diſpoſe to reſt. In the Agonies of Gravel and Stone, and in ſuppreſſions of Urine, nothing tends more to looſen the ureters, neck of the Bladder and it's Sphincter, then tepid Baths ſet in up to the Stomach, this eaſes pain, makes way for the the diſcharge of Urine, Stone, Sand, or ſabulous Matter. In Convulſive Colicks, where from the contraction of the Nerves of the Miſentery, the Bowels have been ſqueezed to the Vertebre of the Back, and the Patients Life in the utmoſt danger, what wonderfull and ſudden Relief have we ſeen theſe Baths give? And not only have they been of uſe for the preſent but by repeating them twice or thrice a Week, for ſome time, the return of the terrible Diſtemper has been quite prevented In Colds, the common method is bleeding, thinning the Blood and promoting Perſpiration, but theſe deſigns might be much aſſiſted and advanced by this bathing; for by the immiſſion of the Water into excretory Ducts of the Skin, the viſcid matter in them would be thinned and expelled, the Veſſels cleared, looſened and ſoftened, and Perſpiration very much promoted and facilitated; but the defilement of the Skin by Pimples, Ulcers, Scabs, Blotches *&c.* Would be prevented, for theſe are the

Effects of this matter lying in the excretory ducts till it burn acrid, corroding and tearing the capillary Veſſels. This kind of bathing is alſo uſeful in all ſudden Violent Pains, for theſe are the Effects of a contraction of the Solids, but Tepid Baths relax the Solids, and ſo mitigate, or remove the Pain, and take off Rigours, Convulſions & Heavyneſs, and by their relaxing the hard, and tenſe Skin, and ſoftening the Fleſh, they fill the Veſſels on the ſurface, which were almoſt collapſed; hence the white, pale, languid Looks are changed to ruddy, or a fine mixture of red and white; they alſo promote Suppuration, by tearing off the Stiffneſs and indalatability of the Solids, and diſcuſs flatulent Humours by cleanſing and widening the pores of the Skin, encreaſing perſpiration, and attenuating and rarefying the groſs humours; and alſo they help to relieve pains of the ſide, Diſeaſes of the Back and Breaſt, by promoting and facilitating Expectoration, as well as by abating the Inflammations. They are uſeful in pains of the Eyes, Ears, and contracted or Sinew-grown Members, by relaxing the Membranes of the firſt, and the Muſcles and Tendons of the laſt. Theſe few inſtances out of many that might be advanced, ſhew not only the uſefulneſs of Tepid Bathing, but the manner how it produces its effects, which being known, we may not only add a great many others, but alſo ſee where it is hurtful; as in all Weakneſs and Relaxation of the Nerves, which Diſeaſe it muſt certainly encreaſe and aggravate all the Symptoms of it, by leting down the Spring of the Fibres ſtill lower, and alſo in Hemorrhages by Rarefying the Blood, encreaſing it's Bulk and widening the Veſſels; and in a lowneſs and depreſſion of Spirits, from the ſlowneſs of the Circulation, and in too great a penury and diſſolution of the particles of the Blood, &c.

4. *Of Bathing in Mineral Waters, Hot or Cold.*

Having conſidered all cold Baths in the ſame light, as acting meerly by preſſure and contraction, and all artificial ſimple Tepid Baths, as producing their Effects by Relaxation and Dilution, Let us now view Bathing in another light, *viz.* In Mineral Waters, and therefore Medicinal. Theſe Baths are either Strictly and properly ſpeaking, or Mineral Waters impregnated with Volatile or fixt Mineral Principles; or they are ſuch as differ from moſt common Water, meerly on account of the Soil they are ſtrained through, and the particular kind of Earth they carry in their Interſtices, which may juſtly appropriate them to ſome particular uſes above common Water; as petrefying Waters, which carry much impalpable Earth in their pores, and are therefore proper to bath in for an exceſſive Perſpiration, or too great a dilatation of the ſudoriferous ducts; Chalk or Limeſtone Waters, which being more drying and healing, therefore better adapted to old Ulcers, Ulcerated Wounds, moiſt cuticular Eruptions &c. Tin and Lead Waters which are ſaid to be colder, therefore cauſe a ſtronger contraction; Marle Waters, which are reported to encreaſe the contractility of the Fibres; As to Mineral Waters properly ſo called, Sulphur Waters which are ſoft, cleanſing, healing & balſamic; Vitriolic Waters, which of all others are moſt aſtringent and ſtrengthening; Nitrous Waters which are cooling, cleanſing and reſiſt putrefaction; Waters with common Sea Salt only, are moſt heating, drying, and ſtimulating; or Mineral Limeſtone Waters, which are cleanſing, drying, and healing. Mineral Water Baths are, either hot, as the Bath, tepid, as Buxton and the reſt of the Derbyſhire warm Waters, or cold, as all the Chalybeate and common Sulphur Baths, whether more or leſs Saline. Bathing in the warm Waters may be uſed at any time of the Year, tho' they are warmeſt in the coldeſt weather in Winter, from the coldneſs of the Atmoſphere, and repletion of the pores of the Earth with VVater, or their conſtipation by Froſt, which prevent the diſſipation of the heat of the Water. Cold Baths are not to be uſed but from *May* to *Septr.* except by ſuch as have been accuſtomed to them; for not only is our Atmoſphere colder, but the Water is heavier, the Body is hotter, it's Fibres better braced, and it's Fluids of a ſtronger Texture and Conſiſtence. *Fallopius Baccius* &c tell us, that the firſt intention of Bathing in warm Baths, is Evacuation, eſpecially if done in Nitrous Sulphureous or Chalybeat (by them called aluminous) Waters; and indeed by relaxing the too riged and ſtiff or bracing the lax Fibres, attenuating, thinning and ſqueezing out the Viſcid perſpirable matter of the excretory Ducts of the Skin, and promoting a free perſpiration; and alſo by it's compreſſing the Bodies ſurface, it throws the Fluids inwards; Hence two very conſiderable Evacuations are encreaſed, *viz* Urine and Perſpiration. 2 Relaxation or Softening the Contractions, Stiffneſs and Rigidity of the parts; whether by cold, or ſome compacted matter. Obſtruction or Emaciation, and for this *Buxton* is the ſureſt known Relief in this Iſland, it being only tepid; for hot Waters rather contract than relax, ſtiffen than ſoften. 3 Drying, and for this Limeſtone Sulphur Baths are remarkable, hence their wonderful ſervice in Cachochymics, Palſies, begining Dropſies, White Swellings, running Sores defilements of the Skin *&c.* 4 Moiſtening, but Relaxation is ſuppoſed to go before, for to reſtore the due and regular influx and circulation of the Blood and Lymph, to a dried atrophic part, before Relaxation, is impoſſible, therefore we here recommend the naturally tepid VVaters. 5 Warming, for as ſoon as you are come out of Matlock or Stonny Midleton Baths, an agreeable glow of Heat and redneſs of the Skin break out over the Body, at which time perſpiration runs high, from which and the compreſſion of the Solids, the perſon is alert, lightſome and pleaſant, and ſeems lighter. 6 Cooling and Strengthening, from leſſening the Humours by Evacuation, bracing gently the Body, taking off clammy Sweats, relaxing too ſtiff Solids, moderating a too rapid circulation, correcting the Acrimonious humours and leſſening the viſcid aqueous or adheſive. On theſe intentions depend their corroborating, reſtringent aperient properties; from theſe alſo they promote digeſtion, chilification, circulation, ſecretion, evacuation and excretion. Fallopius would have us uſe the Bath only once a day at beginning, then twice a day after, in tepid Waters he ſays they may ſtay in five Hours at a time; in hot Waters only two hours, and that the patients muſt go in at Sun riſing, and Seven o'Clock at Night. But we look upon from 15 Minutes to an Hour in tepid Baths, and half that time in the hot Baths, and a few Minutes in the cold Baths ſufficient.

The Reaſon why Bathings in Mineral are more efficacious than in common Water, is 1 from the admixture of Saline and Metallic, Mineral or Sulphureous parts with the Water, which make it more ſtimulating, attenuating, bracing, diſſolving, cleanſing, drying, healing, cooling, penetrating, diſcuſſive and corrective of Acrimony, Softening ſmoothing *&c.* 2 From the Minuteneſs of theſe adventitious Mixtures; for the Medicinal parts of theſe Waters are really ſo ſmall that they are not only inviſible, when looked for through the fineſt micro ſcope, but are incolligible by any art yet known, and incohercible incoercible by any Veſſel; and it was neceſſary they ſhould be ſo; for had it been otherwiſe, they had been incapable to anſwer the Deſigns of Providence, or the Expectation of Humane Neceſſities. For ſince we are ſatisfied that nothing can paſs even the Lacteals but in a fluid form, much leſs could they pierce the ſcarf Skin, enter both by the Mouths of the Excretory Ducts of the Skin, and paſs through the very interſtices or Texture of Fibres and Veſſels, and ſo get in, and mix with the Blood both ways. 2 And as the Medicinal parts of theſe Waters are ſmaller than the particles of matter themſelves, the firſt will not only enter, but enter in greater quantity than the laſt, even as a Steamy or dry Vapour, but that the firſt is ſmaller than the laſt is plain, from the incolligibility and incoercibility of the firſt whereas the laſt may be both gathered and retained. But the Skin of a living humane Body, is not only more thin and porous than that of other Animals, becauſe of it's cloathing, but more ſpongy and open than any Glaſs, metallic or earthen Veſſel, which are much cloſer than Veſſels of Wood, yet the Volatile or Spiritous parts of *Mi*neral Waters are not retainable by the firſt, and much leſs by the laſt, and if theſe Volatile parts make their way through the pores of the firſt Veſſels, much more through the Skin of a humane Body, which is much more patent and large than Veſſels of Wood. Conſider we again not only the aptneſs and diſpoſition of theſe parts to enter the Body, but their Effects when they have entered it, for 1 From the tenuity of their parts they muſt mix with and be entangled both in the Fibres, Veſſels and their contents, and be as ſo many wedges, ſeparating the adheſive, Viſcid, Glutinous Juyces in theſe ſmall evaneſcent capillary Tubes, or acting according to the kind of the Volatile *M*ineral Principles, and their compoſitions. 2 Both from the preſſure of the VVater, the ſmallneſs of it's particles the Relaxation and Softening of the Skin, and the penetration of the Volatile parts, ſome, yea not a little of the common Vehicle muſt unavoidably be lett into the Body and Veſſels by the Skin, which joyning the Volatile principles already let in, both will attenuate, thin and diſſolve the tardy, groſs or impacted humours, and the Veſſels at the ſame time being Looſened, theſe noxious Juyces muſt neceſſarily be leſſened, and perſpiration promoted by each immerſion 3 Conſider we the Area to be immerſed and expoſed to the VVater even the Bodies whole ſurface, which in adults, one with another, is not leſs than 15 ſquare Feet, and ſince every Scruple of the Skin has been demonſtrated to diſcharge a quantity equal to it's own weight in 20 Hours, Then how vaſtly many muſt the perſpiratory ducts, or outlets of that Scruple of Skin be? and conſequently the immiſſion of the Volatile Mineral vapours through the Skin, from the Water, muſt be very conſiderable, capable of producing very great and ſurprizing alterations in the Body; which alterations will be more ſenſible as the mineral VVaters are more highly impregnated with a volatile mineral Spirit, whoſe admiſſion into the Body by the cutaneous pores cannot be hindered or prevented by the plentifulleſt diſcharge of perſpirable matter. 1. Becauſe the more viſcid the matter ſhut up in the excretory ducts is, the more porous, and the more room there is in it to receive and lodge the Mineral Steam from the VVater. 2 Becauſe the more Viſcid or Sizy part of any fluid keeps always neareſt the ſides of the containing Veſſel, whilſt the more fluid, being fitter for and more ſuſceptive of motion, keep the Axis, or middle of the hollow cone, or cylinder. Now, ſeeing neither the force of the Veſſels diſcharging the perſpirable matter, nor the preſſure and weight of the juyces of the Body, like ſo many columns of a far greater altitude than the Bath, can prevent, or ſtop the diſcharge of this matter in the Bath, it is not poſſible nor credible, that it ſhould hinder the inſinuation of this Mineral Spirit which not only enters by the mouths of the excretory or evaneſcent Veſſels, but even through the interſtices themſelves, and ſo fall in directly upon this Lentor on the ſides of the Veſſels; nor can it be alledged, with the leaſt ſhew of Reaſon, that becauſe the Body weighs not more after Bathing than before, therefore there is no ſuch inſinuation into, nor mixture with the Blood, for 1 The preſence of theſe Volatile Mineral principles are ſo far from making the Waters in which they preſide, weigh heavier, whilſt they are in, that it weighs ſenſibly lighter then, and heavier when they are gone. 2 The great increaſe of perſpiration after Bathing not only proves the Relaxation but the immiſſion of ſome Fluider Body than the Blood, whereby the laſt is diluted and prepared for a diſcharge by the Skin. But 3 What not only proves the exiſtence of theſe volatile Principles in Mineral Waters, but their inſinuation into and mixture with the Animal Juyces, is what we find by Experience, that any outward, equal, moderate warmth, relaxes the Skin, and opens its pores, and makes way for the perſpirable matter,

matter to get off; but if the humours are groſs, viſcid, or adhere ſtrongly to the ſides of the Veſſels, this, looſening and ſoftening the Skin and widening it's Veſſels, will only cauſe a greater flow of theſe crude humours to the Skin, where they will ſtick, and ſtop the Mouths of the capillary Veſſels, which obſtruction will ſtill be increaſed from behind, till the Veſſels are irritated to make a larger diſcharge, but they being diſtended beyond their natural Tone, and the obſtructing matter, at the ſame time, very viſcid and groſs, a fever muſt and will, enſue, and this I have known oftener than once to be the caſe of theſe fool-hardy People, who to cure an obſtinate chronic Ague have run into the cold Bath, and pay for their folly with the Expence of their Life. But by going into the naturally warm or tepid Bath firſt, theſe volatile principles making their way into this coheſive glewy matter, and diluting, attenuating and preparing it for motion, its expelled, and the Body relieved, without any danger or detriment; then the Veſſels having been before diſtended they are hardly to be ſuppoſed to receive their force by a relaxing method, as warm bathing is; but they are apt either to under do it, or over do it, which is eaſily prevented by applying to the cold Bath after the hot. This is the true reaſon why cold Baths often ſucceed, when the hot have failed; for a ſizy tough flemmy humour, muſt firſt be diluted looſened and diſſolved by the hot Baths, then the cold muſt brace the Muſcles, Tendons, Veſſels and Nerves. 2. Where the Diſeaſe is of the inflammatory kind, eſpecially where the Blood makes its ſtrongeſt *impetus* upon the Veſſels of either the Head or Breaſt, by the uſe of hot Baths, in this caſe, the Animal juyces are rarefied, and heated, fill and diſtend their Veſſels more, and the old Diſtempers are increaſed, or new ones called in to their Aid. Now this increaſe of febrile heat, Head-ach, Hectic, &c. can neither be owing to the common vehicle nor its warmth, therefore muſt be owing to the admiſſion of theſe mineral volatile principles into the Blood. We might inſtance the ſurprizing good effects from bathing in natural hot Bath, for that intractable diſtemper by Medicine called emphyſema, or a windy dropſy, where the ſwelling ſhifts from place to place in an hour or two, & is attended with a Fever, where the flatulent viſcid matter is attenuated by the Mineral Spirit, diluted by the Water, and the pores of the Skin laid open for its diſcharge; Now here the Tepid Bath would only relax the Solids more, and encreaſe the diſeaſe, but the Mineral Spirit it is chiefly that incides, ſeparates and attenuates this groſs matter and prepares it to be caſt off, and the cold Bath braces up the pores afterward. Again, in the palſy, Tepid Baths increaſe the Relaxation, but natural hot Baths do moſtly reſtore the diſeaſed; this can only be owing to that intractable, impalpable, powerfully penetrating Mineral Spirit; this lets us plainly ſee that all the parts of an humane Body are to this Spirit as a Sponge is to warm Water. To add no more proofs of this, all theſe diſeaſes in which natural hot Bulks are found moſt efficacious and ſucceſsful, and indeed in which they rarely fail, are of the nervous tribe; and the Reaſon of this is becauſe we know of no Medicine ſo capable to reach and enter theſe fine imperceptible delicate Tubes; but it's indiſputable that the Spirit of theſe VVaters not only enter them when drunk, but even by bathing, as we ſee from their amazing Effects by bathing only. To ſet this matter in a clear light, take not only any Medicinal preparation, but any fixt principle impregnating Mineral VVaters, when ſeparated from them, not diſſolvable in common Water, Dry, Pouder, and levigate either the firſt or laſt, as ſubtilly as poſſibly you can, then examine both through a fine Micro ſcope, and their particles will appear larger, than the Blood Globules, and the diameter of one of the largeſt and firſt Water Globules of Blood exceeds not one two Thouſandth part of an Inch, and the diameter of any particle Viſible to the naked Eye, muſt not exceed 1 Hundredth part of an Inch; but Lewen hook and others have diſcovered an infinity of Veſſels in the Body whoſe diameter exceed not 1. 80000th part of an Inch: ſince therefore there are Veſſels whoſe diameter are ſo inconceivably leſs than the Blood Globules, and the fineſt levigated ſubſtances are ſo much larger than the Blood globules, it both is, and was abſolutely neceſſary that the more Medicinal parts of Mineral Waters ſhould be thus minute and fine, that they might not only paſs, but even penetrate from without the delicate Tubes in the Body, and act upon their Fluids. Now the Diſeaſes in which natural hot Baths are found moſt remarkably ſervicable, are ſuch as are exactly adapted to this doctrine. *Viz. Univerſal Palſy*, with loſs of ſenſe and Motion, or only loſs of one; *Numbneſs*, *Weakneſs* or *Lameneſs* proceeding from thence, or tending thereto; *Prickling*, *Throbbing Pains*, with a ſenſation of *Stupor*, at the ſame time *Feebleneſs of the Limbs*, *Lameneſs* from Accidents, as *Gout*, *Bruiſes*, *Falls* or *Blows*, or from *Strains*, *Mortifications, Poyſons, Mercurial Oyntments, Wounds or Ulcers, Partial Palſies, as Hemiphlegia,* when the uſe of *one Side is taken away, loſs of the uſe of a Hand, Arm, Foot, Leg, Tongue, Gullet, of any of the Sphincters* &c. *Or theſe partial Palſies with Cramps and Convulſions; with a Rheumatiſm, or without a Rheumatiſm* & *Dropſy, both Palſy general or particular from a Scurvy, Depravation of motion from Contuſions, frequent Strains or Diſlocations* from the Weakneſs or Laxneſs of the Tendons & Muſcles; violent *Tremors* & *Convulſions* of long ſtanding. Chronic & Habitual *Colic* with a *Palſy, Dry Gripes,* with or without a *Palſy, Gout* with or without *Contractions, Gravel, or Stone, Emaciation* of the parts. *Siatica, Chiragra,* with or without *Lameneſs, Weakneſs, Diſtortion, Contractions or pain. Gout with Scurvy* & *Hyppo, Hyppo* & *Scurvy, Scurvy* alone *Cutaneous puſtulous Eruptions;* ſore *Running Head and Neck, with or without Ichorous or Purulent matter. Scurff, Scales or dry Scabs King's evil, Leproſy, Hyſterics, Hyppo, Cachexy, Rheumatiſm, whether from a Viſcidity* of the Juyces or *Saltneſs* of the *Humours; Old aches and Bruiſes, Pain of the Stomach and Indigeſtion, Vomitings, Dropſy of the Feet and Legs; Pain of the Stomach and Gutts with hectic quotidian, and Conſumption. Flatulency* or wind in the Stomach or Bowels, *Obſtructions of Urine, Shocks of the Brain* by falls or Blows, *Corpulency, Limbs contracted, or Sinew-grown. Catamenia,* obſtructed, exceſſive, depraved or vitiated. *Fluoralbus, Fiſtula's, running Ulcers, conſtant coldneſs with ſhakings. Belland, Prolapſus uteri, White Swellings, pined or emaciated Members, Scorbutic Conſumption and Atrophy, Convulſions and Aſthmas* cured or prevented in Children by the Mothers drinking the Waters. *Uſe of the Limbs loſt by Wreſtling* &c. This is a catalogue of the Diſeaſes in which *Guidoth Pierce* & other Bath Writers have found Bathing in the Bath Waters moſt effectual, and we find them all chronic Diſorders. 2 Nervous, from a Redundancy, Viſcidity, and other depravities of the Nervous and Lymphatic Juyces. Or 3 from acrid, ſcorbutic, muriatic, or lixivial alcaline Salts, fix'd, pricking, tearing, and paining the ſenſible delicate, nervous ſyſtem; or thrown forth and defiling the Skin, or cauſing inflammations, ſuppurations and ulcers, of ſhort, or long diſcharges. What makes Bathing in Mineral Waters more powerful than common VVater, is, becauſe in theſe Diſeaſes of the Skin the VVaters act not ſo much from the diſſoſolution, as it is from thinning, correcting, and drawing forth the ſharpneſs and acrimony of the humours, whilſt the Alcaline Earth dries up the ouzing, thin, watery Diſcharge upon the part, and the Sulphur cleanſes, heals, and aſtringes. VVhat ſeems a Myſtery in theſe Waters is, that they ſhould anſwer ſeeming contrary Indications or Intentions, as to cure corpulency and emaciations; reſtore Sinew Grown or contracted Limbs, and paralitic Members; provoke ſtop, or regulate, the Catamenæ &c. But theſe are very eaſily accounted for, ſince the cure of corpulency depends on promoting, and increaſing perſpiration, to which not only Bathing, but Exerciſe and Temperance, Contribute; and the reſtoring Nouriſhment, and Growth to withered Limbs or Members can only be brought about by attenuating the Viſcid Juyce, and opening the obſtructions which prevented the Influx of Blood and Spirits into the Arteries & Nerves, and unbending the Spring of the rigid Solids, or bracing the looſened Fibres. Contractions or Sinew-growing requires only Relaxation, to ſoften and render the Fibres more flexible, and the Veſſels more dilatable. Palſies require the attenuating and waſting of that Redundance of Viſcid, nervous Juyce which ſoak and relax the Nerves, and deprive them of Action and Senſation, and bracing up the relaxed Fibres. How bathing attenuates the Juyces I ſhave ſhewn before, as alſo how it waſtes them by perſpiration, and thereby inables the Nervous filaments to reaſume their natural Elaſticity, whilſt both Steel, and Sulphur, in the Water, act the part of Reſtringents. Whatever adds to the quantity, Motion and *Mementum* of the Blood and at the ſame time, determines it for the Uterine Veſſels, may be called an Emmenagogic, and alſo whatever takes off the Stiffneſs, and indilatability of theſe Veſſels, and makes them inſuſceptible of a greater accumulation and load of Blood; on the contrary whatever corrects the Acrimony of the Blood, leſſens the quantity of other Animal Juyces, invigorates the Fibres and Veſſels, or gives the Blood a free and unleſſened equal courſe into all the parts of the Body may properly be called an antic memagogic. But that Mineral Waters do all theſe things, and how, I have ſufficiently explained above, and ſhall not here repeat it. We ſhall not dwell longer here on the choiſe of proper Baths in each particular caſe, that falling more naturally in under the inward uſes of Mineral Waters; But only obſerve in the general, that natural hot Baths are improper for hectical Perſons, and ſuch as are lyable to Inflammations or Inflammatory Fevers; as alſo for the plethoric, hot, bilious Temperaments, and for very lax weak atrophic habits &c. The Spring and Autumn, and in caſe of Neceſſity, the Winter it's ſelf, are proper for them; but the heat of Summer, and during the Reign of any contagious epedemic Diſtemper, we judge very improper ſeaſons for the hot Baths; or preſently after a full Meal, or with a Retention of the alvine or urinary Excrements. Therefore a laxative or two ſhould be given to prepare the Body, and they ſhould go into the Bath early in the Morning faſting, or late at Night, before Supper, when Bathing is requiſite for People abounding with Blood, a Vein ſhould be opened firſt. As to the time they are to ſtay in the Bath, and how often they are to go into it. Once a day at firſt, and only ſtay in a few Minutes, till they dip over Head three or four times, then get out, and let the Body be well rubbed and dried. And as the Perſon finds it to agree he may go in oftener and ſtay longer. The number of days he is to go in depends intirely on the heat of the Bath, and the Caſe and Conſtitution of the Patient; for at Bath, 14 or 15 days is reckoned Sufficient, before either an intermiſſion, or exchange of Bathing for Drinking. At Buxton 20 or 30 times may be allowed, tho' fewer will be, and is of very great Service: At Matlock they may go in a Month or more. As to Diet, beware of intemperance in Eating or Drinking, let the Dinner be ſparing that it load not the Stomach; at Evening Bathing, avoid Malt Liquors, Drams, and all Viſcid and Spiritous Liquors, with all ſuch things as render the Body coſtive, hot or feveriſh, or require long time, and great Strength to digeſt: keep ſeaſonable hours, that all digeſtions and evacuations, ſenſible and inſenſible, may be duely and regularly performed, and that you be not ſhortened nor diſturbed in your reſt, nor loſe the proper ſeaſons of bathing. But for theſe things the reſiding Phyſician is always to be firſt conſulted.

Pumping is another outward uſe of both Common and Mineral Waters, but we here conſider the laſt only. Before the Invention of Pumps, the diſeaſed Perſon either ſtood under a Water fall, as from an overſhot Miln, or a Caſcade from a Rock, or other precipice, or two tall ſtrong fellows, took up Water in Buckets, and poured it leaſurely in an even Stream upon the part affected. *B*ut ſince the Invention of Pumps by *Ctbzeſius* an Athenian, or as others will an Alexandrian about two hundred Years before Chriſt, that Method is found much the eaſier and better, 1. becauſe the reſt of the body being kept dry and warm, only the diſeaſed part is touched. 2. *Be*cauſe the preſſure of the Water on that particular place is far greater: For whereas a cylinder of Water two foot high, whoſe baſis is equal to ¼ of a foot preſſes on the Skin with a weight equal only to 9½ lb a Column of Water of the ſame baſis, but 10 foot high, comes with a five fold greater weight, beſides the Weight acquired by it's fall; hence falling with ſuch encreaſe of weight on the part it's ſo much more forcible, penetrates deeper, and carries it's Efficacy farther. 3. When cold Water is uſed, the encreaſed weight, and cold, will make the greater contraction of the Muſcles and Veſſels of that part; the greater the contraction, the ſtronger the attrition of the contained fluids, and the deeper will the Effect reach. 4. This preſſure and contraction by cold Water, not being like Bathing, reaching the whole ſurface of the Body, but only that part affected, the Reſiſtence from the other parts not preſſed nor contracted will be leſſer; hence the contraction of Fibres, Veſſels, Nerves and Muſcles, and the Expulſive force thereupon will be much greater, the ſizy, thick or ſtagnating humours muſt be more forcibly propelled, and the diameters of the Veſſels ſhortened; ſo that they act with greater power over their contained Fluids, the Fibres will be ſhorten'd, braced and ſtrengthen'd. 5. In Pumping with Mineral Waters, the more active, penetrating, volatile and medicinal Principles are hereby darted into the Skin, whoſe pores are much larger than theſe minute Spirituous particles, whereby attenuation and dilution is wonderfully promoted in the fluids, and they are reſtored to their Motion, and carried either into the Blood, or to the outlets of the Skin and there diſcharged, and the Fibres and Veſſels are reſtored to their elaſticity. But as the Mineral Water is hot or warm, it relaxes the Skin, part of the Water, together with the volatile Mineral Principles, enter the pores, gradually thin and diſſolve the morbid coheſions of the Blood, enliven and excite the Solids to more healthy ſtate and vigour. Therefore Pumping has been chiefly uſed for *Stupors*, *Lethargicneſs*, *Inveterate Headachs*, *Niumbneſs*, *Lameneſs*, *Contractions*, *fixt pains*, *Rheumatiſm*, *White ſwellings*, *Old Aches from falls*, *Strains*, *Blows*, *Diſlocations* &c. *Siatica*, *Weak Limbs*, *Lameneſs* with

Contractions, *Relaxation* from frequent *Diſlocations*, *or Contuſions*, *Deafneſs*, *Blows* on the Head, *Dulneſs*, *Pains of the Stomach*, *Shoulders* &c., and habitual *Vomiting*. The time of Pumping is the ſame that of Bathing, the number of Strokes are from 30 to 500. The time to hold the part under a fall of Water may be from 3 Minutes to 15. Or it may be repeated two three or four times at ſhort intervals.

Not only the Mineral Waters themſelves are of ſingular Benefit, when ſuitably duely, and regularly uſed, but even the very Stones, Clay, Sludge and Mud are often found highly beneficial when properly applied. Thus the Ancients, how little defference or regard ſoever we ſhew for them, were far more ſucceſsful in the uſe of Mineral Waters than we, for they took in all the Acids that thoſe Water afforded, and we neglect ſeveral. *Galen* tells us (ix Simp.) that at Alexandria he has ſeen hydropic and ſplenetic People apply the fat Egyptian Earth to their diſeaſed Legs, Thighs, Arms, *Back*, Breaſt, and Sides, and were ſignally relieved by it. This Earth cures alſo, old Inflammations, and thoſe lax white Swellings called *Ædemata*. And he knew ſome that were become cacochimic watery habits, by an immoderate flux of the hemorrhoids, receive ſenſible benefit and many inveterate pains intirely removed by it. And *Dioſcorides* tells us that this Mud or Clay Warms, Softens and Diſcuſſes. And *Pliny* (lb 31 & 6) ſays the ſame. *Fallopius de Therm.* (c. 16) Says that the properties of this Clay are 1 to ſoften hardened parts. 2 To reſolve and diſcuſs them when ſoftened. 3 Drying and Strengthening the Nervous parts. 4 Strengthening, and Warming, cold parts. The parts, ſays, he that receive Benefit from this Clay, are all the parts of the Body, but eſpecially the Joynts and Nervous parts; for to theſe they are ordinarily applied, and ſometimes to the Hand and Breaſt. To the like purpoſe Speaks *Baccius* (*de Therm.* c. 16) The manner they uſed it was this. The Patient waſhed the Diſeaſed part in the Mineral Water, then laid a thick Plaiſter or Pultis of the Mud on it, covered up the whole Body, except that part which was expoſed to the Sun, till the Clay was dry, which might be one two or three Hours, then put it off and waſh the part clean in the Water. This they did twice or thrice in the Morning, and as often in the Afternoon. But if the Mudd was cold, or taken out of a cold Mineral Spring, they warmed it in ſome cloſe Glaſs, or glazed Earthen Veſſels, before they uſed it. And when done for the laſt time, Forenoon and Evening, they anointed it with ſome Oyl either ſuitable to the diſtemper, or of the Nature of the Water, then they were as curious in the choice of their Mudd as of their Water. They had alſo another way of uſing this Clay; they laid on a little at a time and encreaſed it by degrees, then laid on a great heap, let it ly on till it cooled then took it off, and put on freſh, this they repeated for two, three or four times, and at laſt waſhed the part in Water, dried it, rubb'd, and anointed it with Oyl, and then tried to uſe it moderately. After this manner they uſed the Clay fourteen or fifteen Days, begining with a ſhorter time and leſs quantity of Clay at firſt, and encreaſing both to the 8th day, then decreaſed by degrees dayly till they came to the 15th, and if needful after ſome intermiſſion, repeated the ſame again; when they had finiſhed this courſe, they refrained for 40 days from the ſame things forbidden them after Bathing and Drinking, and uſed the part eaſily every day. Enquire we into the cauſes of this Effect of the Clay, we ſhall find the practice of the Ancients highly reaſonable, and our own general neglect of it unjuſtifiable. What made *Galen's* Ægyptian Clay ſo efficacious, was not it's being meer Earth, but the Sludge of the Nile mixt with Nitre Sulphur and Bitumen; and our Sludge taken out of the Baſon, where it's ſuffered to gather there, would be better than that in the coruſe, being chiefly the Recrements of the Water it ſelf, but Seldom ſuffered to gather there, and ſeldomer uſed. But if we allow the VVaters to be Medicinal which we cannot deny, this Sludge muſt be more ſo, for it has not only the ſame Principles with the Water, but where it lies out of the way and undiſturbed, we have found, by ſeveral Obſervations, that the Volatile Principles attract one another, become more bulky and heavy, and inſtead of flying off, precipitate and lodge in the Mudd. The Ochre depoſited in the courſe of all Chalybeate Mineral VVaters convinces us of this; for tho' the VVater has therefore ſo far loſt it's Volatile Vitriol, that it ſtrikes no Purple Colour with aſtringents, yet that ſame Mudd or Ochre contains much Steel in it, and in it's alcaline Earth lies much Sulphureous matter, Iron and Salt of the VVater, tho' the Sulphur was not diſcoverable in the VVater it ſelf; all which principles we have often ſeparated diſtinctly from the

Mudd. Another proof of this we have met with in ſome ſtrong Chalybeates of a very ſlow Spring, and large Reſervoir, which have kept all the Water diſcharged in ſeveral Days, we have extracted fixt Vitriol from this Stagnant VVater, but could procure no ſuch thing from the VVater as it Springs freſh up, in the emptied and cleaned Reſervoir. Another Proof we find from the bottom of Mineral Sulphur Springs little or not uſed, there is a thick black intolerably Stinking Sludge, which when dried is of a brown colour, and in a dark Room, Burns Blew, has the ſame ſuffocating intolerably fœtid ſmell as Sulphur, tho' this change of it's Colour, from black to brown, in drying, ſhows a diſſipation of a great part of it's Sulphur, therefore the Method of warming the Sludge, is very injudicious, and deſtructive of it's principles and virtues. For that from cold Springs being laid to the Body cold, the natural heat of the parts will be ſufficient to ſet the Mineral parts in motion, and as the wet Sludge warms upon the part, the Waters with it will alſo warm and relax the parts ſo as the Volatilized Mineral principles will readily enter, and together with them, ſome of the finer parts of the Water, and the greateſt part of the effluviating Mineral will enter the Skin; for we have ſhewn already that the riſing, perſpirable matter from the part, can give very little Reſiſtence to them, the upper part of the Sludge being ſtill cold, and the diſpoſition of theſe Minerals to motion being very great, they exert their force chiefly to the warmeſt ſide. For another proof of this, in the bottom of ſome Mineral Sulphur Springs, on removing their old Stone Baſons to place new ones, there have been found ſome handfulls of Sublimed Yellow Flowers of Sulphur, ſticking to the lower ſide of the old Baſons. Theſe are ſufficient proofs that the clay or ſludge, is much ſtronger and richer of the principles, and therefore more powerful and efficaſious than the VVaters; eſpecially (as we juſt now hinted) if we conſider, that it it to be applyed to the ſurface of the Body, where the far greater medicinal parts of the Water are, by the Bodies heat, rarefied and fly off, but by application of the warmed Clay, the Water in it warms & relaxes the parts like a Tepid Bath, thins the tough groſs humours, corrects the Saline, whilſt ſo much of it's own Salts is carried into the pores as gently irritates the ſluggiſh diſtended Veſſels, and helps to diſſolve their contained Viſcid Juyces. And as the Clay dries, both the Water imbibed from it by the part affected: And the groſs humours that the Water, Salt, and action of the Veſſels, had thinned, fly off by degrees; and the acrid Salts corrected by dilution, and the alcaline Earth; the ferruginous Principle, at the ſame time, braces and ſtrengthens the Veſſels, whilſt the Sulphur cleanſes, reſtringes and heals. That this not meer Theory, the Experience of all the Ancients converſant in this ſubject, will vouch for us. And for our own time let the two bald pates who uſed the Sludge of Guilthwait Spaw to their Heads, and recovered freſh heads of hair, tho' one was 40 Years of Age and never had Hair on his Head, and miſerable Weſton the poor Shoemaker in Rotherham, whoſe Breaſt and Side was eaten up of a Cancer, till the Ribs and Pleura were laid bare &c. atteſt for us. The caſes in which we find it moſtly uſed, are *Scald & Scurffy Heads* moiſt or dry, *Leprous parts*, *Rheumatiſm* with *Palſy* and *Dropſy*, *Bellan*, *White Swellings*, *Contractions* of the *Limbs*; *Callous*, *or Slimy matter*, lodged in any part or joynt; *Windy diſtentions*, *Swellings*, *Weak*, *Paralytic Diſtorted*, *Contracted Convulſed*, *Ulcerated*, *Swell'd* and otherwiſe *Diſeaſed and ugly Limbs*, that Bath Mudd, and ſeveral others Sludges have reſtored. We have known Stones digged out of the Bottom and Sides of *Moffat Well* (which riſes out of a Mountain of Stone) carried, or ſent ſome ſcores of Miles diſtant, to perſons labouring under habitual Colics, who by reducing theſe Stones to a fine impalpable Pouder, and taking half a dram of it, twice a day in ſome Vehicle, have received notable Benefit, and often a thorough cure. Now theſe Stones Stinking abominably when Poudered, and Scaling into *Laminæ* like the *Lapis Sciſſilis*, and glittering all over like Gold Leaf, we muſt conclude that they contain only the Volatile Mineral Principles of this Sulphur Water, with ſome of it's Salts lodged in a Spongy porous alcaline Limeſtone, through which the Water is ſtrained, which forms a durable kind of Quinteſſence from it's Principles, which are ſo very volatile in the Water, that it's worth little when carried to any conſiderable diſtance, or kept; for which reaſon, the Stones are not poudered till they are uſed.

We obſerved before that the Medicinal parts of Mineral Waters are next to inconceivably ſmall, and that it was abſolutely neceſſary, they ſhould be ſo, not only that they might paſs the Lacteals which our common food, that conſiſts of fixt parts, does, for tho' the Lacteals are ſmall, and always imperceptible, except when filled with Chyle, or in ſome morbid ſtate of the part, yet ſince they not only imbibe and tranſmitt parts equal to, but larger than the Globules of Blood, whoſe diameter is 200th part of an Inch, they muſt bear a very ſmall proportion in Minuteneſs to theſe Veſſels obſerved by *Lewenhook* and *Ruyſch*; whoſe Diameter exceeds not 800000th part of an Inch. But, exceedingly minute as they are, theſe are containing Veſſels ſtill, and ſuch as will and do contain not only a ſimple aqueous, but a mixt fluid, containing both nutritious, and excrementitious parts, and tho' Water is that vehicle which conveys all Nouriſhment to Animals and Vegetables, yet ſtill Water is retainable in ſeveral ſorts of Veſſels, but the Spiritous parts of Mineral Waters are unretainable by all kinds of Veſſels. That theſe Veſſels of Animal Bodies do contain and keep in motion a Watery fluid is plain from this, that theſe Veſſels are diſcoverable by proper Glaſſes, but the particles of Water are imperceptible by the help of the fineſt Glaſſes yet invented. Since then there are Veſſels in Animal Bodies ſo very ſmall, which nevertheleſs tranſmit Juyces without extravaſation in a healthy State, it follows that the particles of theſe juyces are larger than the interſtices of the Veſſels, therefore are they retained in them, but the Volatile Medicinal particles of Mineral Waters being, at leaſt, as much ſmaller, as the ſmalleſt Veſſels of the Brain, are to the Lacteals, and we cannot poſſibly imagine ſo great a diſproportion between the interſtices of the Fibres of theſe Veſſels, therefore the volatile parts will enter the interſtices of the Veſſels, with an equal, if not Superior facility, that the aqueous parts enter and paſs the ſmalleſt viſible Veſſels. To make this ſtill more obvious, we all know with what penetrable force the effluviating Spirits of Hartshorn or Salarmoniac ſtrike the olfactory nerves of the Mouth and Noſe, yet theſe Spirits brisk and volatile as they are, may be, and are retained in cloſe cork'd Bottles, but the Spirits of Mineral Waters are not ſo retainable, therefore they are ſmaller. Again, theſe volatile Spirits of Hartshorn & Sal armoniac, being put into a Bladder, well tied and hung up in a dry place, the Spirits will firſt exhale, thin the Water or Vehicle in which they were, will gradually conſume and waſte; now this Expence is not by Veſſels but by penetrating between the interſtices of the Fibres of the ſundry coats of the Bladder, and if the aqueous parts will exhale and waſte, the Spirituous muſt much ſooner; and if theſe Spirituous parts which are retainable in ſundry ſorts of Veſſels, much more and ſooner theſe of Mineral Waters; which are retainable by no kind of Veſſels. If it be here objected that the Experience is not fair, therefore the Inference cannot be juſt, for the Tryal was made with the Bladder or Viſcera of a dead Animal, which is laxer than that of a living. But the anſwer is 1 The Tranſudation daily made in all the Cavities of the Body proves a tranſition of a fine aqueous dew, through the pores or interſtices of the Veſſels, but I have ſhewn above that the particles of this matter are much larger than thoſe of the *M*ineral Spirit, and therefore enter ſooner, eaſier, and more plentifully. 2 The ſpicula of cantharides paſs the Scarf Skin, and the interſtices of the Skin, and mix with the Blood. Therefore the particles of the mineral Spirit being ſmaller will penetrate quicker, the ſame may I ſay of Cataplaſms of Cumin Seeds, Garlick, Herings, the ſudden reviving of a faint Perſon by a dram *&c.* But to return to the Lacteals, that they are very ſmall we are ſure. 1 From the ſmallneſs of the pores of the mucous coat of the Inteſtines, through which all Chyle, or whatſoever enters the Mouths of the Lacteals muſt be filtred. 2 From the innumberable Wrinkles and Valves of the inteſtines themſelves, as tho' provident nature had been apprehenſive, that had this mucous coat been upon it's ſtretch, ſome groſſer parts of our Drinks and Aliments might and would paſs their ſingle Strainer, get into the Mouths of the Lacteals, and there occaſion obſtructions; but by the preſent Mechaniſm, the nutritive parts, with their vehicle, are ſo ſtrained from the groſſer, That not a viſible particle eſapes to reach the Lacteals. 3 From the narrowneſs of both the Mouths & Pipes of the Lacteals themſelves, they belonging to a tribe as ſmall as the fineſt capillary Arteries in the Body, that nothing from within might be admitted into the Blood, but what might be diſcharged again. 4 The largeneſs of the internal Surface of the inteſtinal Tube, being near equal to the ſurface of the whole Body, which was not ſolely deſigned to prevent the too Glibe and ſudden Motion of our food through them, but it being neceſſary that nothing but the fineſt parts ſhould be ſtrained off for chyle, in order to attain this Tenuity of parts, from ſuch a Mixed Maſs, as our food generally is, it was alſo requiſite that there ſhould be a large or proportional Surface on the inteſtines, through which this Liquor might be ſtrained; and ſince it muſt be ſo fine, and the pores through which it paſſes ſo ſmall, there muſt alſo be a ſuitable propulſive force to drive it through; which is done by the Muſcles of the Belly, and Muſcular coats of the inteſtins themſelves. I might 5 add that nothing can nouriſh our Bodies, but what has it's ſelf been nouriſhed. i. e. nothing but what is diſſolvable in Water, or may by warmth and action, be reduced to a fluid. And whatever of food kind enters the inteſtines not thus diviſible or diſſoluble in Water, cannot be ſuppoſed to enter or paſs the Lacteals. 2 Since the internal ſurface of the inteſtines, is near equal to the external of the whole Body, and that for one great Reaſon that the chyle might be more exquiſitely & purely filtred off, before it reaches the mouths of the Lacteals, even ſo pure as to paſs the ſmall outlets of the Skin, by dayly perſpiration; and as the myſentry has it's inlents, or Lacteals, and the Skin is outlets, or excretory ducts, ſo the myſentry has alſo it's other Veſſels, as Veins, Arteries, Lymphatics, and perhaps alſo abſorbent Veſſels, ſo the Skin has it's abſorbents, which receive in from the Atmoſphere, and from Bodies outwardly applied; by theſe are the minute parts of Medicinal Mineral Waters communicated to the Blood, whereby they immediately purge and cleanſe the cutaneous Glands, and excretory Ducts. Again, ſince the internal ſurface of the Inteſtines is near equal to that of the Skin, how large a ſcope have Mineral Waters to exert their force when uſed both inwardly and outwardly, even a ſpace near 30 ſquare Feet, which muſt be of the greateſt ſervice. Again, do we allow the Mineral Spirit in them to penetrate when by the interſtices of the Fibres of the Veſſels and Membranes, this helps us wonderfully to account for their Effects in releiving, removing, and curing, obſtructions, or diſeaſes of the Liver and Spleen, which are ſpread and expanded over the Stomach, and by whoſe interſtices, the Water is no ſooner warmed, than it immediately ſends a part of it's Volatile Medicinal Principles thither; and ſince from the Stomach they paſs immediately to the *Duodenum* and Ilium, they quickly reach the Lacteals, where they muſt diſplay their next and ſenſible good Effects in Obſtructions and Diſorders there, by comparing what we have ſeen them do on the outſide of the Body; their next *Impetus* is upon the Lungs, hence no place can be no ſooner ſenſible of the good or bad Effects of Mineral Waters than theſe; then from the Heart they come directly by the deſcending great Artery to the Abdominal Viſcera, and by the aſcending Trunk of the ſame Artery to the Head; thus we ſee how ſpeedily all the three *Viſcera* of the 3 great Ventricles are Viſited by theſe Waters drunk. Hence we ſee alſo the Reaſon why the *Viſcera* of the lower Belly muſt receive the ſpeedieſt Relief from drinking of thoſe Waters, both becauſe of the extent of the internal ſurface of the inteſtines, and of the greater Repletion of the Water with Spirits in theſe parts, ſome, of which we preſume to penetrate the parts directly *Prior* to any Circulation or Secretion!

Thus I have faithfully and impartially, given ſome account of the Principles and Virtues of theſe Waters, without concealing, adding, or altering any thing that may be to the advantage or diſadvantage of either the Waters or their Drinkers. But have neither time nor convenience here, to inquire in the 5 different ſorts of Nitre, and the 4 ſpecies of Marine Salt diſcovered and obſerved by me in theſe ſeveral Springs. I confeſs its with Regret, that after all my moſt exact and various Experiments, I am capable to give no more certain and ſatisfactory account of all the Principles of *Neville Holt* Water; Since it's undenyably the moſt wonderfull and peculiar Medicinal Spring yet diſcovered in this Iſland. But this can neither affect nor hinder it's amazing (and to Strangers) ſeemingly incredible Succeſs in the ſhorteſt time, even in the moſt hopeleſs and deplorable circumſtances. Inſtance *Tho. Walker* a poor, helpleſs deſtitute Wretch, aged 15 Years, who came *Decr.* 29 1729 to implore my help. He had laboured ever ſince laſt *July*, under a moſt colliquating *Diabetes*, even to the loſs of the Retention of his Urine, which he diſcharged in ſo great quantity, as was frightfull to the People whereever he came. He was emaciated to a Skeleton; his Skin was black, rough and wrinkled; his Cheeks and Temples Sunk in; The Legs and Arms were pined to Skin and Bones; had great Stareing, Gogling Eyes; a burning Hectic; thick, weak, trembling, vermicular Pulſe; immenſe and perpetual thirſt; a ſtrong Bulimy or Dog like Appetite; could walk very little, and at each Step his Trembling Legs were ready to fold under him. Such a ſhocking Spectacle muſt move the compaſſion of any endued with the leaſt Humanity. I applyed to ſome charitably diſpoſed Friends to raiſe a ſmall contribution

tribution for a preſent ſubſiſtencc for him, which was readily and cheerfully granted From that time, to this day *Janr.* 41 He drunk every Morning a quart of this Water. His Diabetes is much better, his Thirſt very little, the Hectic is quite gone, the Retention of Urine in a great meaſure reſtored; his Appetite not half ſo ravenous; has now a lively brisk Eye, walks firm, begins to change his black wrinkled *Toad Skin*, & will quickly be well.

I may venture to ſay, that was this Water impregnated with Vitriol of Iron, either mature or immature, or volatile Steel, it would turn red, purple, blue, black or Inky with Galls and other Aſtringents, or turn the Braſs Veſſel black in which it is evaporated, not one of all which it does. Or if it contained Vitriol of Copper, it would be a nauſeous, Violent dangerous Emetic and would quickly curdle *Urine*, and coagulate to a hard Cake *Serum*, *Bile*, and all the Animal Juyces of a deep Graſs Green Colour, and turn Nitro-calcarious Waters thick, and green, and throw down a thick large green Sediment; and turn a Braſs or Copper Veſſel in which it's boyled, of a bright red Copper colour *&c.* Not one of which is true. Indeed it throws down a white coagulum in Nitro-calcarious Waters, the ſame as *Oyl of Tartar*; but has no ſuch effect on the Solution of their Salts when their Earth is ſeparated. It curdles *Urine* and coagulats *Milk Bile* and *Serum* but all are White, as it is when done with *Alum*, if the Water was evaporated in a Sand heat, in Glaſs, Porcellane or white Earthen Veſſels. But if boyl'd away over an open Fire in a Braſs or Copper Veſſel, the caſe is very different, for the Lixivium will be Green and will coagulate the Animal Juyces of a greeniſh colour, from the Copper corroded of the Veſſel in the Operation. Wherefore when the Salts are intended for either internal Medical purpoſes, or for future Experiments, the Water muſt not be evaported in ſuch Veſſels, for the Salts procured will be unſafe and dangerous in the firſt caſe, and ſalacious or unſucceſsful in the laſt. The *Nitre* in this Water, which is the far greateſt part of the Salt, attenuates, dilutes and cools like other Nitre, but the aſtringent Salt coagulates and contracts ſtrongly. And ſince the Water affords this Salt in a much leſſer quantity, is ſo tediouſly and difficultly ſeparated from it's Earth and Nitre, and a great part of it may be reduced to a very aſtringent Earth again, then too nicea purification, and attempting to cryſtalize this Salt, muſt be a very great hindrance to it's Medical Virtues and Uſes. It ought not to be cryſtalized at all, but barely ſeparated from it's Earth.

Upon the whole from all the Experiments I have yet been able to make of this we ſee, it's contents are all *Sui generis* and their virtues uncommon, powerful & quick; But mankind muſt have Patience until they be analysd as they deſerve.

FINIS.

Too many Errata *both of Spelling, Pointings and Matter having eſcaped the Preſs; ſuch as affect the Senſe, are here Collected, which the Candid Reader is deſired to Correct, and to excuſe the reſt.*

ERRATA.

P.	*l.*	*read*
4	7	Leuco—
8	11 12	Parallel
	20	Croilſtone
9	38	Singularly
10	14	Phyſicians,
11	37	N. B. It's is often put for it,
14	22	Sulphur;
	24	Aſhes, Vitriol;
15	29	Diminution
16	11	Ceti,
	16	Reſtles, Evacuations,
28	6	Dilatation
	27	*Relaxation*
33	19	Does it
34	10	Subject
38	11	and moſt
43	23	purify
45	24	Dr. Willis
47	16	Jaundice,
	37	Years,
	38	Years,
50	24	lies
56	13	Perfection?
59	24	Number
60	8	Skin. In
	18	Church. On
64	14	*Dele* the
	31	Hyſtory.
68	19	*Dele* ago
72	34	10 Pints

P.	*l*	*read*
78	21	Waters,
		Examined.
	38	*add* paſſages
84	9	Lees
92	32	Altitudes
10	29	was
108		hem ;
110	7	Ounces, freſh Pou
12	25	ye
13	12	ſits -- nor is
145	14	salts *dele* ;
148	1	Eminence
17	31	Water, Fire, or Acids,
178	5	Beef,
186	16	State, alone,
192	25	Membranes
19	7	Leucophlegmatia,
207	18	St. Vitus's
209	37	diſtended
216	19	keenneſs
222	14	Non-naturals
225	6	ſufficient.
	24	Diſeaſe
230	5	Broth
236	23	Aromatics
244	1	we
250	9	*add* by
	33	brace
251	38	or Lax—
255	23	after Urine read (for that is—)

P.	*l.*	*read*
257	12	Atrophic
263	14	equires
265	24	attacks
269	14	Pleuriſy ;
271	1	are ſtill
	28	Gravelly Perſons
273	1	*Scaiolæ*
	28	Frankincenſe ;
275	15	Acid
	20	Chryſtals--ſtrong
276	18	Scruples
280	33	Moral
282	1	Repetition
284	24	begins
286	35	move
293	15	Ventricle
294	19	aſſure
298	8	*Dele* broken
	25	Succedaneum
299	33	St. Katherine
302	10	of it
	30	heterogenious
307	15	Pitcairn
308	14	eaſe
310	21	much more
312	1	turn
	32	Dilatation
320	25	Momentum.
	32	Anti-emenagogic
322	1	as